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REPORT TO CONGRESS

MEDICAID QUALITY OF CARE MEDICAL RECORDS STUDY

Donna E. Shalala
Secretary of Health and Human Services
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Table of Contents

Executive Summary ES-1

Acknowledgements

Introduction and Purpose 1

Research Approach 2

Results 6

Pediatric Asthma 7

Hysterectomy 23

Complicated Labor and Delivery 40

Study Conclusions 59

References 61

Figure 1 Criteria for Judging Appropriateness to Hospitalize a Child for Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study 13

Figure 2 Criteria for Judging the Severity of Diagnoses at Time of Admission for Children Hospitalized with Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study 14

Figure 3 Criteria for Judging the Process of Care for Children Hospitalized with Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study 15

Figure 4 Criteria for Judging the Outcomes of Care for Children Hospitalized for Asthma in California, Georgia, Michigan in 1991. The Medicaid Quality of Care Study 16

Figure 5 Diagnoses of Women Hospitalized for Hysterectomy in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study 29

Figure 6 Criteria for Judging the Appropriateness to Perform a Hysterectomy on Women Hospitalized in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study 30

Figure 7 Criteria for Judging the Process of Care for Women Hospitalized for Hysterectomy in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study 31

Figure 8 Criteria for Judging the Outcomes of Care for Women Hospitalized for Hysterectomy in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study 32
Figure 9 The Appropriateness to Perform a Cesarean Section or Vaginal Delivery Among Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study 47
Figure 10 Criteria for Judging the Process of Care Criteria for Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study . . . 48
Figure 11 Criteria for Judging the Maternal Outcomes of Care for Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study 49
Figure 12 Criteria for Judging the Newborns Outcomes of Care for Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan, 1991. The Medicaid Quality of Care Study 50

Table 1 Sample Assessment of Quality of Care Indicators 4
Table 2 Patient and Hospital Characteristics of 2,391 Medicaid and Privately Insured Children Hospitalized for Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study 17
Table 3 Appropriateness to Hospitalize Children with Pediatric Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study 18
Table 4 Severity of Diagnoses at Time of Admission for 2,391 Medicaid and Privately Insured Children Hospitalized for Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study 19
Table 5 Process of Care for 2,391 Medicaid and Privately Insured Children Hospitalized for Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study 20
Table 6 Intensity of Care for 2,391 Medicaid and Privately Insured Children Hospitalized for Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study. 21
Table 7 Outcomes of Care for 2,391 Medicaid and Privately Insured Children Hospitalized for Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study 22
Table 8 Patient and Hospital Characteristics of 2,424 Medicaid and Privately Insured Women Hospitalized for Hysterectomy in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study 33

Table 9 Appropriateness of the Decision to Perform a Hysterectomy on 2,425 Medicaid and Privately Insured Women in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study . . . 34

Table 10 Severity of Diagnoses Leading to Hysterectomy Among 2,425 Medicaid and Privately Insured Women in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study . . . 35

Table 11 Conditions Leading to Surgery and Underlying Chronic Diseases Among 2,425 Medicaid and Privately Insured Women Hospitalized for Hysterectomy in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study . . . 36

Table 12 Process of Care for 2,425 Medicaid and Privately Insured Women Hospitalized for Hysterectomy in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study . . . 37

Table 13 Length of Stay and Intensive Care Unit Admissions Among 2,425 Medicaid and Privately Insured Women Hospitalized for Hysterectomy in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study . . . 38

Table 14 Outcomes of Care Among 2,425 Medicaid and Privately Insured Women Hospitalized for Hysterectomy in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study . . . 39

Table 15 Patient and Hospital Characteristics of 2,378 Medicaid and Privately Insured Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study . . . 51

Table 16 Appropriateness of Performing a Caesarean Section or Vaginal Delivery Among 2,378 Medicaid and Privately Insured Women Hospitalized for Complicated Deliveries in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study . . . 52

Table 17 Severity of the Diagnoses of of 2,378 Medicaid and Privately Insured Women Hospitalized for Complicated Deliveries in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study . . . 53

Table 18 Preventable Risk Factors Among 2,378 Medicaid and Privately Insured Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study . . . 54

Table 19 Process of Care for 2,378 Medicaid and Privately Insured Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study . . . 55

Table 20 Intensity of Care Indicators for 2,378 Medicaid and Privately Insured Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991 The Medicaid Quality of Care Study 56

Table 21 Outcomes of Care for 2, 378 Medicaid and Privately Insured Women and Infants Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991 The Medicaid Quality of Care Study 57

Table 22 Prenatal Care for 2,378 Medicaid and Privately Insured Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Study, 1991 58

APPENDIX A Legislative Background

APPENDIX B Letters to Hospital Administrators

APPENDIX C A Study of the Appropriateness, Process of Care, and Outcomes of Medical Care for Medicaid Patients
Contract No. HCFA 500-94-0017

Executive Summary

In 1986, Congress mandated a study to evaluate the quality of health care provided to Medicaid recipients and other populations. In response to this mandate, HCFA awarded a contract to the MEDSTAT Group, Inc., to conduct an evaluation of the appropriateness (medical necessity), process of care, and effectiveness (outcomes) of selected medical and surgical treatments and procedures using data abstracted from inpatient medical records. This report presents the findings of the Medicaid Quality of Care Medical Records Study which compared quality of hospital care provided to Medicaid and privately insured women and children.

The study examined the care of patients with three conditions: pediatric asthma, hysterectomy, and complicated labor and delivery. Five indicators were developed to assess the level of the quality of care given during hospitalization for these conditions: appropriateness to hospitalize or perform a procedure, process of care during the hospitalization; outcomes of treatments and procedures; severity at time of admission, and intensity of care. Independent criteria for judging the quality of medical care for each indicator were developed by national panels of medical experts for each clinical condition.

One hundred eighteen hospitals were selected to represent all hospitals in California, Georgia, and Michigan that provide services for children and women and their newborns. Approximately 400 medical records were randomly selected for each condition, payor group, and State during the year 1991. The sample for this study consisted of 2,391 children hospitalized for asthma, 2471 women who underwent hysterectomies and 2,378 women with a complicated labor and delivery, totaling 7,240 Medicaid and privately insured women and children. Data for the complicated labor and delivery sample included data from both maternal and neonatal records.

An analysis of patient and hospital characteristics revealed that Medicaid-covered children in two States and the women in all three States were younger and represented more minority groups than their privately insured counterparts. In general, Medicaid women and children were treated in public hospitals, teaching hospitals, and hospitals with large bed capacities.

The appropriateness of medical decisions to hospitalize a child with asthma, perform a hysterectomy, and do a cesarean section on a woman with labor and delivery complications was comparable between Medicaid and privately insured children and women. The study also revealed that once hospitalized, Medicaid-covered children with pediatric asthma, women undergoing hysterectomy, and women with labor and delivery complications received a level of care that was similar to that experienced by privately insured children and women. Most importantly, outcomes of care were essentially similar between the two payor groups, in each condition, and across the three States.

At baseline, the Medicaid patients were more severely ill. At the time of admission, Medicaid-covered children with asthma had already had more hospital admissions than their privately

insured counterparts. Women on Medicaid undergoing hysterectomies with nonmalignant conditions were admitted more acutely ill. Similarly, Medicaid-covered women with complicated labor and delivery had more emergent complications and more preventable risk factors than the privately insured. This higher level of severity at admission suggests that the Medicaid-covered women and children in this sample were not accessing care in as timely and appropriate manner as their privately insured counterparts.

As a result, there were differences in outcomes that were not related to the inpatient quality of care provided to Medicaid-covered patients. For example, Medicaid-covered women undergoing hysterectomy suffered more complications than privately insured women. However, this finding was related directly to both the severity of the underlying condition at the time of admission and sociodemographic factors such as race and age. As a result, the Medicaid patients with hysterectomies had longer hospital stays and slightly more admissions to intensive care units. There also were more premature births among Medicaid-covered women admitted with labor and delivery complications than among privately insured women. Despite this, there were no substantial differences between outcomes of the infants of Medicaid and privately insured women.

The results of this study indicate that Medicaid-covered women undergoing the common procedure of hysterectomy or with conditions that complicate labor and delivery, and children hospitalized with asthma receive inpatient care that is adequate and compares favorably with care received by privately insured patients. Differences in severity of the condition at the time of admission, and use of hospital resources, and complications among the Medicaid patients may be directly attributable to the greater burden of disease among these vulnerable populations.

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A Report to Congress

on

The Medicaid Quality of Care Medical Records Study

Introduction and Purpose

Quality of health care is an integral part of the entitlement to Medicaid. Although much of the federal legislation for Medicaid has expanded eligibility, services, and provider reimbursements, the spirit of these enactments is to provide quality health care, as evidenced by recent Congressional mandates encouraging the development of methods for assessing quality assurance systems that include quality of care.[1] A brief legislative history is provided in Appendix A of this report. This report is organized into three sections, the introduction and purpose of the report, the research approach, and the results.

The Institute of Medicine defines quality of care as *the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge*[1], a global perspective based on a consensus of the nation's experts. Insuring the health of the public means maintaining adequate quality for all. In 1986, Congress mandated a study to evaluate the care received by Medicaid and other populations.[1] This report presents the findings of The Medicaid Quality of Care Medical Records Study, which assessed the quality of care provided to Medicaid and privately insured women and children.

This study evaluates quality of care for Medicaid eligible women and children hospitalized for three high-volume, sentinel conditions: pediatric asthma, hysterectomy, and complicated labor and delivery. In addition the study analyzes acute care hospitalizations to determine if there was potential under use of medically necessary treatments and procedures that, if not received, could have led to adverse health effects for Medicaid beneficiaries.[2]

The choice of pediatric asthma, hysterectomy, and complicated delivery for this study was based on HCFA's Interim Report to Congress: Patterns of Health Care Utilization Study, 1992, which presented Medicaid and statewide statistics on incidence and prevalence of more than 160 conditions. It included a comparison of use of services by payor group, and geographic variation.[3] For each of the three conditions in the present study, five indicators were developed and tested for validity and reliability. The following indicators were used to assess the levels of quality in the care given during acute care hospitalizations:

- Appropriateness to hospitalize or perform a procedure
- Process of care during hospitalization
- Effectiveness or outcomes of care for selected treatments and procedures.

- Severity at the of hospital admission
- Intensity of care

Information about hospitalizations for these conditions was abstracted from medical records to evaluate the above indicators for each patient. The criteria for the five indicators of quality were developed independently for each clinical condition. Medical experts identified indicators derived from the same clinical and demographic information used in medical decision making, and essential information needed to measure adequacy of care.

The Medicaid Quality of Care Medical Records Study is HCFA's second and final part of its Report to Congress on Medicaid Quality of Care. The study was mandated by Section 9432(c) State Utilization Review System of the Omnibus Reconciliation Budget Act of 1986 (OBRA 86), Public Law 99-509.

The mandate stated:

(1) The Secretary shall conduct a study of the utilization of selected medical treatment and surgical procedures by Medicaid beneficiaries to assess the appropriateness, necessity, and effectiveness of such treatments and procedures.

(2) The study shall analyze the extent to which there is significant variation in the rate of utilization by Medicaid beneficiaries of selected treatments and procedures for different geographic areas within States and among States.

(3) The study shall also identify underutilized, medically necessary treatments and procedures for which --
(A) a failure to furnish could have an adverse effect on health status, and,
(B) the rate of utilization by Medicaid beneficiaries is significantly less than the rate for comparable, age-adjusted populations.

(4) The study shall be coordinated, to the extent practicable, with the research program established pursuant to section 1875(c) of the Social Security Act, with particular regard to the relationship of the variations described in paragraph (2) to patient outcomes[a]

Research Approach

This section describes the indicators used to assess quality of care, the study design, the selection of clinical conditions, the selection of States, selection and recruitment of hospitals, and the abstraction and processing of data. The Office of Research and Demonstrations in HCFA contracted with The MEDSTAT Group, Inc. (formerly SysteMetrics) to conduct this study. This contractor's report is contained in Appendix C.

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[a] This report responds to subsections (c)(1) and (c)(3)(A) and (B). HCFA's 1992 Interim Report to Congress: Patterns of Health Care Utilization in the Nonelderly Medicaid Population of Selected States responded to Parts (2), (3) (B), and (4) of this mandate.

Based on existing standards of practice, and hundreds of typical scenarios that occur in the treatment of the three conditions, panels of national medical experts developed independent criteria for measuring adequate quality of care. The panels selected only information that should be recorded in every patients' medical record irrespective of variations in documentation to form the basis of each criterion. The following are descriptions of the five indicators used in dimensions in analyzing quality of care.

Quality of Care Indicators

Appropriateness consisted of criteria that assessed the decision to hospitalize a child for asthma, perform a hysterectomy, or deliver a woman with a complicated labor vaginally or by cesarean section. Essential information forming the basis of these decisions was rated against the appropriateness criteria. There were three ratings: appropriate, inappropriate, or equivocal (the independent criteria were partially met). The evaluation of appropriateness included potential under use of medically necessary treatments and procedures that, if not received, could lead to adverse health outcomes.[5] The indicator for asthma was based on clinical severity and social situations that could result in deterioration of the episode. The indicator for hysterectomy and cesarean section was based on the diagnoses and level of severity.

Process of Care consisted of criteria that assessed the adequacy and timeliness of selected treatments and procedures, which if deemed inadequate, could have an adverse effect on patient outcomes. Indicators for process of care were categorized as having a high probability of immediate serious harm; delayed serious harm; or, uncertain or low probability of serious harm.

Outcome of Care consisted of criteria that assessed the results of care provided during the hospitalization. Specific indicators included complications, or death after treatment was initiated; the condition of the patient at discharge compared to admission; the appropriate or adequate medication therapy for post-hospital care, and instructions for home care and outpatient follow up.

Severity consisted of criteria that assessed the level of acuity or seriousness of a patient's condition at the time of admission to the hospital. Specific indicators included level of severity of the primary diagnosis, and presence of coexisting conditions and risk factors.

Intensity of Care consisted of criteria that assessed the number of tests and treatments during the hospitalization, length of the hospital stay and admissions to intensive care units.

Table 1 gives an example of a scenario for child admitted to a hospital with an acute episode of asthma. The example gives the criteria for evaluating quality of care, and the actual care that took place.

Table 1

Sample Assessment Quality of Care Indicators

Clinical Scenario: A two-year-old child is admitted to the hospital with an acute episode of pediatric asthma

Data Element from Medical Record	*Criterion*	*Action Taken*
Appropriateness A child is admitted with a heart rate of 136 breaths/minutes and a respiratory rate of 60. The child has severe wheezing while exhaling, uses accessory chest muscles to breath, and has decreased alertness	Time from admission to time of initiation of treatment. No delay in treatment of one-half hour or more if significant respiratory distress is present as indicated by a respiratory rate >150 percent of mean for age	Child treated in 10 minutes
Process of Care While on 5-8 liters of oxygen per minute by mask, the child's arterial oxygen concentration remains below criteria 90 percent after two readings.	Immediately initiate respiratory assistance	Admitted to the intensive care unit. Child sedated, intubated and placed on a ventilator
Outcome of Care The child's respiratory rate is 24 breaths per minute	Respiratory rate normal for age and stable	Child discharged home on theophylline or bronchodilator unless otherwise contradicted.

Study Design

This study was a cross sectional review of patients hospitalized in California, Georgia, and Michigan for pediatric asthma, hysterectomy, or complicated labor and delivery in 1991. Quality of care for Medicaid patients was compared to independent criteria established by the expert panels for each condition and compared with care provided to privately insured patients.

Selection of Clinical Conditions

HCFA's Interim Report to Congress: Patterns of Health Care Utilization Study[6] identified these three clinical conditions that are relatively inexpensive procedures but whose volume ranks them among the most costly for the Medicaid program. The choice of pediatric asthma was influenced further by national trends for more than a decade that have shown an unusually high rate of increase in the number of acute episodes of asthma and of hospital admissions among urban children.[5,7]

Selection of States

California, Georgia, and Michigan were selected for the diversity of their Medicaid programs and population characteristics, and, because combined they contain approximately 20 percent of the Medicaid beneficiaries in the United States. The three states shared some program characteristics but differed on others. By 1991, California and Michigan expanded Medicaid eligibility for pregnant women, newborns and young children up to 185 percent of the Federal poverty level, while Georgia was up to 133 percent. Georgia spent approximately 20 percent more per Medicaid recipient than California. Georgia and Michigan had more streamlined application processes. All three States covered well child care and Early and Periodic Screening and Diagnostic Testing (EPSDT), prenatal care, and routine pap smears; and in all three States, the major therapeutic groups of medications prescribed to children with asthma were covered. Only Georgia required no copayments for these children's medications.

Selection and Recruitment of Hospitals

HCFA convened a National Hospital Recruitment Steering Committee meeting to design a strategy for recruitment of hospitals to voluntarily participate in the study. The committee members were from key national organizations and their corresponding state organizations in the study States: the American Medical Association, the American Hospital Association, the American Academy of Pediatrics, the American College of Obstetricians and Gynecologists, the American Health Information Management Association, State hospital associations, State medical societies, and Medicaid administrators from each State.[b]

One hundred eighteen hospitals were sampled from the list of all urban hospitals in each state that provided services for pregnant women and newborns, and women having a hysterectomy. The list had been rank ordered into low, medium, or high by their ratio of Medicaid to total patients discharged during 1991. The final sample of women's hospitals was stratified proportionally from the three levels of Medicaid share. The same procedure was used to obtain the sample of children's hospitals for inpatient pediatric asthma from each State. Approximately 400 medical records from each State, condition, and payor group were selected using systematic random sampling. When the number of acceptable medical records was below the required sample size, replacement records were drawn. The sampling method allows the results of the study to be representative of urban hospital care in California Georgia, and Michigan.

Medical Record Abstraction and Processing of Data

Computerized abstraction forms were developed for each clinical condition to collect information about hospital characteristics, payor source clinical status at time of admission, a general and clinical condition-specific medical history, diagnostic tests and treatments, surgical procedures, medical interventions, patient responses to care and changes in status (such as admission to an

[b]Letters of endorsement are in Appendix B.

intensive care unit), status at time of discharge, and plans for post-discharge follow-up. A pilot study tested the clinical criteria on 50 medical records per condition from each State. Items that did not have acceptable validity and reliability levels were modified. If an item remained unacceptable after several tests, it was dropped from the form.

Professional registered nurses, registered record administrators, and accredited records technicians with expertise in the care of patients with pediatric asthma, hysterectomy, or labor and delivery abstracted the medical records. The abstractors went through an initial training program and a series of follow-up group and individual sessions. Inter-rater reliability checks were done. The abstractors were blinded to the payor source on each record. All federal Privacy Act and other federal requirements were met during the collection, abstraction, and storage of the records. The electronic files of the data reside at the headquarters of HCFA in Baltimore. The analyses were conducted using Statistical Analysis System (SAS) - a computer programming language. Univariable statistics were computed, and multivariable regressions done when there were within State differences between Medicaid and privately insured patients.

Results

This section is organized according to condition. The discussion on each condition includes population and hospital characteristics, and the quality of care indicators: appropriateness, severity at time of admission, process of care, intensity of care, and outcomes of care.

Pediatric Asthma

Characteristics of Children Hospitalized with an Acute Episode of Asthma

The study sample consisted of 1,189 children covered by Medicaid and 1,202 by private insurance, totaling 2,391. The children were two through 17 years of age and hospitalized for an acute episode of asthma (Table 2). Because the study sampled hospital admissions, a child could appear more than once in the sample.

Age:

- *Children in the Medicaid group were younger than their privately insured counterparts in two States.* Fifty five percent of Georgia and 54 percent of Michigan Medicaid children were under age six compared with 41 percent of privately insured children in those two States (Table 2).

Ethnicity:

- *The Medicaid group consisted of more minorities.* For example, only 18 percent of the California Medicaid children were Caucasian compared with 37 percent of the privately insured. In Georgia, 20 percent of the Medicaid children were Caucasian compared with 60 percent of the privately insured, and in Michigan, 36 percent were Caucasian compared with 67 percent of the privately insured children (Table 2).

Hospital characteristics:

- *More Medicaid children were treated in public hospitals.* This was most striking in California, where four times as many Medicaid children were in public hospitals (27 percent versus 6 percent) (Table 2).

- *The proportion of admissions to teaching hospitals, hospitals with a high nurse to patient bed ratio, and large hospitals (>400 beds) varied between the two payor groups.* For example, more Georgia Medicaid (48 percent) than privately insured children (18 percent) were admitted to teaching hospitals. In Michigan, however, more privately insured (66 percent) than Medicaid children (52 percent) were admitted to teaching hospitals. In California, 83 percent and in Georgia, 70 percent of Medicaid children were in hospitals with a higher nursing staff to patient ratio compared with 53 and 65 percent, respectively of the privately insured children (Table 2).

Appropriateness of Admission

The appropriateness of the decision to hospitalize a child for an episode of attack was based on a set of physical and social factors (Figure 1). If one of these was present, then an admission was judged appropriate. There had to be an absence of respiratory difficulty, and good certainty about family support to provide care in the home for this admission to be inappropriate. These criteria allowed for hospitalization of disadvantaged children so they could receive care that could prevent an episode from worsening. Unlike the other two conditions, there were no equivocal criteria for appropriateness to hospitalize a child for asthma.

Appropriateness of decisions to hospitalize:

- *Of the 2,391 children admitted for asthma, there were only four (0.02 percent) inappropriate admissions.* One child was in the Medicaid group and three were privately insured (Table 3).

Severity of the Asthma Episode

Assessment of severity included the level of severity of asthma symptoms on admission, the presence of complications, and life-threatening asthma episodes in the past (Figure 2).

Severity of the episode on admission:

- *Severity at admission for Medicaid children hospitalized with asthma was similar to their privately insured counterparts.* In California, which had the highest percentage of moderate to severe admissions, 82 percent of Medicaid and 78 percent of privately insured patients had moderate to severe asthma episodes. In Georgia, 41 and 42 percent, respectively, and in Michigan, 41 and 45 percent, respectively, had moderate to severe asthma on admission (Table 4).

Presence of complication and coexisting condition:

- *Fewer Medicaid than privately insured children were admitted with asthma complications in Georgia and Michigan* (34 and 25 percent, respectively, for Medicaid children compared with 41 and 36 percent, respectively, of privately insured). However, Medicaid children in all three States had slightly more coexisting conditions (Table 4).

History :

- *More Medicaid recipients than privately insured had more than one previous hospitalization for asthma in all three States.* In California, Georgia, and Michigan, 38, 36, and 49 percent, respectively, of the Medicaid children experienced at least two prior

hospitalizations, compared with 24, 23, and 38 percent, respectively, of the privately insured (Table 4).

Process of Hospital Care for Children with Asthma

Process of care was assessed by whether the care children experienced in the hospital had a high probability of leading to immediate or delayed serious harm, or an uncertain or low probability of serious harm. The latter category was constructed to indicate that the process of care may not necessarily lead to harm (Figure 3).

Care that could lead to a high probability of immediate serious harm:

- *The proportion of Medicaid and privately insured children receiving care that did not meet the criteria established by the study and that had a high probability of leading to immediate serious harm was similar in all three States.* However, in California, more children received care that could result in immediate serious harm than in the other two States: 27 percent of Medicaid and 25 percent of privately insured compared to 6 percent of Medicaid and 8 percent of privately insured in Georgia, and 12 percent of Medicaid and 13 percent of privately insured in Michigan (Table 5).

Care that could lead to a high probability of delayed serious harm:

- *The proportion of Medicaid children who received care that could lead to a high probability of delayed serious harm was similar in all three States.* For example, in California, 47 percent of Medicaid and 46 percent of privately insured received this type of care

Care that could lead to uncertain or low probability of serious harm:

- *More Medicaid children experienced care that could lead to uncertain or low probability of serious harm* (Table 5). For example, 72 percent of Georgia Medicaid children compared with 54 percent of privately insured were rated this way. Some reasons for this differences were as follows: 18 percent of Medicaid children in Georgia had no usual source of care compared with 10 percent of the privately insured. In California, 38 percent of Medicaid and 25 percent of privately insured children had no documentation of proper medication at discharge; and in Michigan 41 percent of Medicaid covered children had no documentation of proper medication at discharge compared with 34 percent of privately insured children.

Intensity of Care

Length of the hospital stay, intensive care unit (ICU) admissions, and the number of diagnostic tests and treatments comprised intensity of care

Length of Hospital Stay:

- *The distribution of the length of stay was different in the Medicaid sample in all three States.* In California, especially, there were more Medicaid-covered children with stays of more than 4 days (14 percent) than privately insured children (5 percent). Eighteen percent of California Medicaid-covered children had 1-day stays compared with 27 percent of privately insured children (Table 6).

ICU Admissions:

- *The proportion of Medicaid and privately insured children admitted to an ICU was identical in two states.* Six percent of Georgia and 5 percent of Michigan children were admitted to an ICU in each payor group. This was not true in California where 10 percent of Medicaid and 6 percent of privately insured were admitted to an ICU (Table 6).

Tests and treatments:

- *While the number of diagnostic tests was similar for each payer group, Medicaid covered children had fewer pulmonary function tests and broncholator treatments.* For example, in Michigan, 39 percent of Medicaid and 50 percent of privately insured children had more than one pulmonary function test per day. In California, fewer Medicaid covered children had two ore more broncholator treatments (51 percent versus 72 percent among the privately insured), and different classes of medication (45 percent versus 63 percent among the privately insured) (Table 6).

Outcomes of Care

Outcomes of hospital care for children with pediatric asthma included: deterioration of patient's condition during hospitalization; complications as a result of inadequate or untimely care; asthma worse, or unstable at discharge; readmission for asthma within two weeks; and death (Figure 4).

Deterioration of patients' condition during hospitalization:

- *Similar numbers of Medicaid and privately insured children experienced a deterioration of health status after care had been initiated during the hospitalization.* Deterioration was rare among both payor groups, 2 percent or fewer deteriorated during the hospital stay (Table 7).

Complications of treatment:

- *Similarly, treatment complications were unusual among children in either group.* For example, only 2 percent of California Medicaid and privately insured experienced complications during the hospitalization. In Georgia, slightly fewer Medicaid covered children (2 percent) had a treatment complication than the privately insured (5 percent) (Table 7).

More severely ill or unstable at discharge:

- *Children with asthma were rarely more severely ill at discharge.* One percent or fewer Medicaid and privately insured children experienced more severe illness or instability at discharge (Table 7).

Admission within two weeks of previous admission:

- *Few Medicaid or privately insured children experienced a readmission within two weeks.* For example, only 2 percent of Medicaid children in California and one percent of privately insured were readmitted if this admission occurred within two weeks of discharge from a previous admission for asthma (Table 7).

Death:

- *One death occurred in the Medicaid group in Michigan* (Table 7).

Summary: Pediatric Asthma

The quality of care provided to Medicaid children hospitalized for asthma in this study was comparable to that provided to privately insured children. There was no difference in the appropriateness of hospitalization between Medicaid and privately insured children, no serious shortcomings in the process of care, and no evidence that Medicaid children had poorer outcomes.

There were, however, differences suggesting that the Medicaid children in this study had more serious underlying disease than the privately insured children. More Medicaid children had a history of severe asthma and had a higher number of previous admissions for asthma even though they were a younger group of children. In two States, Medicaid hospital stays were significantly longer. Factors related to asthma severity such as exposure to allergens, lower use of outpatient care, or lack of education about use of asthma medication could be related to increased severity among the less advantaged children.

There was evidence that Medicaid children in this study experienced shortcomings in the process of care that would not necessarily cause serious harm. For example, more Medicaid children in this study were discharged without receiving a prescription for appropriate medication than their privately insured counterparts.

The results also suggested that Medicaid children used more hospital resources than did privately insured children. Their hospital stays were longer and they more often had a history of previous hospitalizations. Their younger age in two of the States suggests that they may require more resources in the future than their privately insured counterparts. In general, however, Medicaid covered children had fewer tests and treatments. Despite the longer stays and fewer tests and treatments, outcomes were similar among both groups suggesting that there may be tests and treatments that do not necessarily affect outcomes.

There were differences between States that were not specific to Medicaid. For example, hospital admissions for mild asthma with extenuating circumstances for both Medicaid and privately insured children in California were more than five times higher than in Georgia and Michigan. In both payor groups, more California children experienced care that could lead to a serious harm than in the other two States. Also, there may be many factors that related to the finding in California such as, geographic variations in physician practice patterns and differences in outpatient management of pediatric asthma. In addition, more children in both payor groups in California may be in alternataive health care delivery systems.

It appeared that the Medicaid children came to the hospital with more severe asthma episodes than their counterparts and because of this, used more hospital resources. However, once in the hospital, these children received care that met the criteria established by experts and had outcomes of care that were both satisfactory and similar to outcomes in the privately insured group.

Figure 1
Criteria for Judging the Appropriateness to Hospitalize a Child for Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

Cases should have at least one of the following conditions:

Abnormalities of pulmonary function or other tests
- Abnormal blood gases, O_2 saturation, pulmonary function tests, chest x-ray, potassium

Extenuating social factors
- Concern that care giver unable to bring child to the hospital for needed follow up, or will not give medication at home
- Unreliable, incompetent or addicted care giver

Infections or suspected infection
- Pneumonia, sepsis, bronchitis

Serious preexisting conditions
- Bronchopulmonary dysplasia,
- Chronic lung disease
- Congenital heart disease
- Cystic fibrosis
- Malnutrition
- Neuromuscular disease

Vital sign abnormalities
- Rapid respirations or pulse
- Fever

Other extenuating factors
- Dehydration or inability to drink or urinate
- History of respiratory failure or intubation
- Two prior physician office/emergency room visits within the preceding 48 hours

Sources: 1. The Medicaid Quality of Care Medical Records Study Expert Physician Panel, 1991. Health Care Financing Administration. 2. National Asthma Education Project: National Heart, Lung, and Blood Institute. Guidelines for the diagnosis and management of asthma: Expert Physician Panel Report. *Pediatric Asthma Allergy Immunology*. 1991; 54-186.

Figure 2

Criteria for Judging the Severity of Patient Diagnoses at Time of Admission for Children Hospitalized with Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

Coexisting Conditions
- Bronchopulmonary dysplasia
- Chronic lung disease
- Congenital heart disease
- Cystic fibrosis, diabetes
- Diabetes
- Neuromuscular disease

Complications
- Abnormal heart rhythm
- Bronchitis
- Collapsed lung
- Coma
- Dehydration
- Pneumonia
- Respiratory failure
- Toxic levels of theophylline

History
- History of >1 hospitalizations for asthma
- Two or more emergency room or physician visits within 72 hours preceding the admission.

Severity at Level of Asthma Episode Admission
- Moderate - more lung constriction, rapid breathing, obvious trouble breathing, pale color, more wheezing, subnormal arterial oxygen.
- Severe - extreme difficulty breathing, cyanosis (blue color), inaudible breath sounds, severely compromised arterial oxygen, need for a ventilator, loss of consciousness, or respiratory arrest.
- Respiratory Failure

Source: The Medicaid Quality of Care Medical Records Study, Expert Physician Panel, 1991. Health Care Financing Administration.

Figure 3

Criteria for Judging the Process of Care for Children Hospitalized Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

High probability of immediate serious harm

- Appropriate medications not given if asthma moderate or severe
- Oxygen not given if asthma moderate or severe
- Patients with acute respiratory failure not admitted to an intensive care unit
- Theophylline given if signs of toxicity present

High probability of delayed serious harm

- Abnormal oxygen level at discharge
- Abnormal pulmonary function test at discharge
- Follow up visit not planned within one week of discharge for patients with a moderate or severe asthma episode
- No investigation of fever ≥102
- Sedatives given.
- Symptoms of moderate to severe asthma present at discharge
- Temperature, heart rate, respirations unstable at discharge

Uncertain[1] or low probability of serious harm

- Appropriate medications not documented at discharge
- Arterial oxygen and pulmonary function not monitored if asthma moderate to severe and recalcitrant to treatment
- Bronchodilator treatment not given for repeat asthma episodes
- Daily pulmonary examination not recorded
- IPPB[2] treatment given
- No admitting chest ray if first asthma episode
- No reason for antibiotics (if given) documented
- No usual source of care
- Theophylline not check if patient was taking theophylline
- Vital signs recorded less than four times daily

[1]The expert physician panel constructed this category to indicate that the underlisted factors may not lead to serious harm.

[2]Intermittent Positive Pressure Breathing.

Source: The Medicaid Quality of Care Medical Records Study Expert Physician Panel, 1991. Health Care Financing Administration.

Figure 4
Criteria for Judging the Outcomes of Care for Children Hospitalized for Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

Asthma worse at discharge than admission
- Admission < 2 weeks before current hospitalization
- Low or high theophylline levels at discharge
- Transfer to another facility because of poor outcome

Death

Deterioration of the patient's condition during hospitalization:
- Abnormal heart rhythm
- Admission to an ICU
- Cardiopulmonary arrest
- Collapsed lung
- Development of pneumonia

Occurrence of complications of treatment
- Iatrogenic theophylline toxicity or other medication problem
- Infections caused by treatment
- Problem with insertion of breathing tube

Source: The Medicaid Quality of Care Medical Records Study, Expert Physician Panel, 1991. Health Care Financing Administration.

Table 2
Patient and Hospital Characteristics of 2,391 Medicaid and Privately Insured Children Hospitalized for Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

Patient and Hospital Characteristics	Medicaid			Privately Insured		
	California	Georgia	Michigan	California	Georgia	Michigan
# of Hospitalizations[1]	396	374	[illegible]	393	362	447
% Distribution of Patient Characteristics[2]:						
Age in years						
2 - 5	53	55 **	54 **	52	41	41
6 - 12	33	33	30	31	44	39
13 - 17	14	12	16	17	15	20
Gender						
Male	65	62	58	63	63	59
Female	35	38	42	37	37	41
Ethnicity						
Caucasian	18 **	20 **	36 **	37	60	67
African-American	41	78	57	28	36	23
Hispanic	34	1	1	19	0	1
Asian	5	1	0	7	1	0
Other[3]	3	1	5	8	3	9
% of Children Admitted to:						
Public Hospitals[4]	27 **	58 **	11 *	6	40	7
Teaching Hospitals[4]	50	48 **	52 **	45	18	66
Hospitals with High:						
Staff to Bed Ratio[4, 5]	83 **	70	66 **	53	65	80
With a Bed Size > 400	16	59	43 **	12	27	58

* Statistically different from the privately insured sample, p-value <0.05.

**Statistically different from the privately insured sample, p-value <0.01.

[1]Children could have more than one hospitalization.

[2]Distributions may not add to 100 percent due to rounding

[3]Other includes American Indian, Alaskan Natives, Black Hispanic, White Hispanic, and missing (> 01%).

[4]Classification of hospitals based on American Hospital Association Annual Survey, 1991 data.

[5]Represents the ratio of hospital employees who give direct patient care to patient beds.

Sources: 1. The Medicaid Quality of Care Medical Records Study, 1991. Health Care Financing Administration.
2. American Hospital Association Annual Survey, 1991 data.

Table 3

Appropriateness[1] to Hospitalize Children for Pediatric Asthma in California, Georgia and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

	Medicaid			Privately Insured		
Appropriateness[1] Indicator	California	Georgia	Michigan	California	Georgia	Michigan
# of Hospitalizations	396	374	419	393	362	447
# of Inappropriate Admissions	0	1	0	1	1	1

[1]Appropriateness criteria allows for a higher degree of physician discretion and did not allow for equivocal equivocal decisions to hospitalize other than for hysterectomy or complicated delivery.

Source: The Medicaid Quality of Care Medical Records Study, 1991: Health Care Financing Administration.

Table 4
Severity of Patient Diagnoses at Time of Admission for 2,391 Medicaid and Privately Insured Children Hospitalized for Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

	Medicaid			Privately Insured		
Severity Indicators	**California**	**Georgia**	**Michigan**	**California**	**Georgia**	**Michigan**
# of Hospitalizations	396	374	419	393	362	447
% of Children Hospitalized with:						
Moderate to Very Severe[1] Asthma	82	41	41	78	42	45
Any Asthma Complication	28	34 *	25 **	27	41	36
Any Important Coexisting Condition	12 **	10	14 *	6	7	10
>1 Hospitalizations for Asthma	38 **	36 **	49 **	24	23	38

* Statistically different from the privately insured sample, p-value <0.05

**Statistically different from the privately insured sample, p-value <0.01.

[1]Life-threatening

Source: The Medicaid Quality of Care Medical Records Study, 1991 Health Care Financing Administration.

Table 5

Process of Care for 2,391 Medicaid and Privately Insured Children Hospitalized for Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

	Medicaid			Privately Insured		
Process of Care Indicators	California	Georgia	Michigan	California	Georgia	Michigan
# of Hospitalizations	396	374	419	393	362	447
% with Care that Could Lead to a:						
High Probability of Immediate Serious Harm	27	6	12	25	8	13
High Probability of Delayed Serious Harm	47	42	37	46	42	39
Uncertain or Low Probability of of Serious Harm	58 *	72 **	63 *	49	54	55

* Statistically different from the privately insured sample. p-value <0.05

**Statistically different from the privately insured sample, p-value <0.01

Source: The Medicaid Quality of Care Medical Records Study, 1991. Health Care Financing Administration.

Table 6

Intensity of Care for 2,391 Medicaid and Privately Insured Children Hospitalized for Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

	Medicaid			Privately Insured		
Intensity of Care Indicators	California	Georgia	Michigan	California	Georgia	Michigan
# of Hospitalizations	396	374	419	393	362	447
% Distribution of Length of Stay in Days among Children Hospitalized for Asthma:						
1	18 **	11 *	14 *	27	16	21
2	31	30	36	39	33	38
3	24	27	27	22	26	20
4	13	15	12	7	16	11
5 or More	14	16	11	5	9	10
% of Children Admitted to an Intensive Care Unit	10 *	6	5	6	6	5
% of Children with:						
More than 2 Diagnostic Tests per Stay	71	81	70	75	79	65
1 or More Pulmonary Function Test per Day	45 **	36 **	39 **	63	49	50
More than 2 Classes of Medication per Stay	72 **	63	73	82	70	74
2-or More Bronchodilator Treatments per Day	51 **	34 **	44 **	72	46	57

* Statistically different from the privately insured sample, p-value <0.05.

**Statistically different from the privately insured sample, p-value <0.01.

Source: The Medicaid Quality of Care Medical Records Study, 1991. Health Care Financing Administration.

Table 7

Outcomes of Care for 2,391 Medicaid and Privately Insured Children Hospitalized for Asthma in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

	Medicaid			Privately Insured		
Outcomes of Care Indicators	**California**	**Georgia**	**Michigan**	**California**	**Georgia**	**Michigan**
# of Hospitalizations	396	374	419	393	362	447
% of Children Who:						
Deteriorated during Hospital Stay	1	0	1	1	1	2
Experienced Complications of Treatment	2	2 *	4	2	5	5
Were More Severely Ill at Discharge	0	1	1	1	1	1
Were Admitted[1] within 2 Weeks of a Previous Admission	2	2	4	1	1	2
Died[2]	0.3	0	0	0	0	0

* Statistically different from the privately insured sample, p-value <0.05

**Statistically different from the privately insured sample, p-value <0.01

[1]Refers to admission included in this study

[2]There was one death in Michigan among the Medicaid children.

Source: The Medicaid Quality of Care Medical Records Study, 1991. Health Care Financing Administration.

Hysterectomy

Characteristics of Women undergoing Hysterectomy

The study sample consisted of 1,185 women covered by Medicaid and 1,240 privately insured women undergoing a hysterectomy, totaling 2,425 in the sample (Table 8). Reasons for undergoing hysterectomy are listed in Figure 5.

Age:

- *Women in the Medicaid group were younger.* In California, Georgia, and Michigan, 27 percent, 46 percent, and 44 percent, respectively, of the Medicaid women were under age 35 at the time of surgery, compared to 12 percent, 20 percent, and 15 percent, respectively, of the privately insured women (Table 8).

Ethnicity:

- *There were more minorities in the Medicaid sample.* For example, 36 percent of Medicaid covered in California were Hispanic compared to 13 percent privately insured women. In Georgia, 68 percent of the Medicaid-covered women were African-American compared with 28 percent of the privately insured. In Michigan, 30 percent of Medicaid and 9 percent of privately insured women were African-American (Table 8).

Type of Surgery:

- *The proportion of abdominal hysterectomies performed was similar between payor groups.* Seventy three percent of Medicaid and 76 percent of privately insured women in California underwent abdominal procedures. In Georgia, 79 and 77 percent, respectively, underwent abdominal procedures. Slightly more Medicaid-covered women in Michigan (89 percent) had abdominal hysterectomies than privately insured women (83 percent) (Table 8).

Hospital Characteristics:

- *More Medicaid-covered women had hysterectomies in public hospitals in two States.* Forty five percent of women in California and 44 percent in Georgia were operated on in public hospitals compared to 10 percent and 21 percent, respectively, of the privately insured women (Table 8).

- *In general, more Medicaid-covered women had their surgery in teaching hospitals, hospitals with high staffing patterns, and large (>400 beds) hospitals.* In California, for example, 44 percent Medicaid covered women had surgery in teaching hospitals compared with 26 percent of privately insured women. In Georgia, 76 percent of Medicaid women

had surgery in hospitals with high staff to bed ratio compared to 57 percent of privately insured women; and 77 percent of Medicaid women had surgery in large (>400 bed) hospitals compared with 40 percent of privately insured women. An exception was Michigan, where 69 percent of Medicaid and 88 percent of privately insured women had surgery in hospitals with high staffing patterns (Table 8).

Appropriateness of the decision to do a hysterectomy

Assessment of appropriateness of the decision to perform a hysterectomy was categorized as inappropriate, equivocal, and appropriate. The judgement of appropriateness included assessments of severity of the underlying condition, failure of past treatment, desire for future pregnancies and menopausal status (Figure 6). Neither appropriateness nor severity could be judged for 6 percent of the study sample because of missing information needed to rate each case.

Appropriateness of the decision to perform a hysterectomy:

- *Fewer Medicaid-covered women underwent a hysterectomy for inappropriate clinical reasons than did privately insured women in California* (20 and 27 percent, respectively) (Table 9). This difference remained after adjustment for patient and hospital characteristics.

- *In contrast, in Georgia, 36 percent of Medicaid and 26 percent of privately insured women had inappropriate surgery* (Table 9). Some of this difference was related to patient socioeconomic indicators, such as age and race, and hospital size in an adjusted analysis. These differences were not present in Michigan.

Severity

Because women could have multiple indications for having a hysterectomy, the most acute reason leading to surgery was used to judge severity at the time of admission. To measure severity at admission, four groups of conditions were classified into three levels of severity at the time of the surgery (Table 10). Other measures of severity included the number of reasons for surgery, presence of cardiovascular risk factors, and other chronic conditions such as diabetes and chronic renal failure (Table 11).

Level of severity of the major diagnosis at the time of admission:

- *Fewer Medicaid covered women were in the mild category at admission.* For example, in California, 28 percent of Medicaid covered women were in the mild category compared with 36 percent of privately insured women (Table 10).

- *None of the differences in severity were due to more advanced cancer.* The severity of cancer at the time of surgery was equivalent between the two payor groups in all three States. For example, in Michigan, 89 percent of Medicaid and 89 percent of privately insured women had a cancer that was moderately advanced and 6 and 5 percent of Medicaid and privately insured women, respectively, had a more advanced malignancy (Table 10)

Number of reasons for undergoing a hysterectomy:

- *Fewer Medicaid-covered women in two States had more than one diagnosis leading to hysterectomy.* In California, 30 percent of Medicaid-covered women compared with 36 percent of privately insured women had more than one reason for undergoing surgery. In Georgia, 23 percent of Medicaid and 36 percent of privately insured women had more than one diagnosis before surgery (Table 11)

Presence of coexisting conditions:

- *Medicaid-covered women in two States had coexisting diseases than privately insured women.* This was especially true in Georgia where 39 percent of Medicaid covered women had coexisting disease compared with 23 percent of the privately insured women (Table 11).

Process of Hospital Care

The process of care indicator was used to assess whether care resulted in a high probability of immediate or delayed serious harm or uncertain or low serious harm according to the objective criteria. Figure 7 shows the criteria for the assessment of process of care.

Care that could lead to a high probability of immediate serious harm:

- *Two percent or fewer Medicaid and privately insured women experienced care that could cause immediate serious harm* (Table 12).

Care that could lead to a high probability of delayed serious harm:

- *With the exception of one State, similar proportions of Medicaid covered and privately insured women experienced care that could lead to delayed serious harm.* Ten percent of Medicaid and 13 percent of privately insured women in California, and 6 and 4 percent in Michigan, respectively, experienced this type of care. In Georgia, fewer Medicaid-covered women (9 percent) experienced care that could lead to delayed serious harm than the privately insured group (14 percent) (Table 12).

Care that could lead an uncertain or low probability of serious harm:

- *Fewer Medicaid-covered than privately insured women experienced care that could lead to an uncertain serious outcome.* Seventy four percent of Medicaid and 86 percent of privately insured women in California, 66 and 79 percent, respectively in Georgia, and 79 and 87 percent, respectively, in Michigan experienced this type of care (Table 12). Lack of documentation of early post-operative examinations often was the reason for the high frequencies of this type of care among privately insured women.

Intensity of Care

Intensity of care for hysterectomy was assessed using length of the hospital stay and number of intensive care unit admissions.

Length of Hospital Stay:

- *Length of stay was longer for Medicaid-covered women than privately insured among women undergoing an abdominal hysterectomy.* In California, Georgia, and Michigan, 9 percent, 19 percent, and 12 percent, respectively, had lengths of stay longer than a week compared with 1 percent, 5 percent, and 4 percent, respectively, of the privately insured women. Length of stay for Medicaid and privately insured women undergoing vaginal hysterectomies was similar except for Georgia Medicaid women whose stays were somewhat longer (Table 13).

Length of Time Spent in Surgery

- *The time spent in surgery was longer among the Medicaid sample of women undergoing abdominal surgery.* This was especially true in California, where 37 percent of women were in surgery less than 2 hours compared with 46 percent of the privately insured sample. In addition, 31 percent of the California Medicaid-covered women who had vaginal procedures spent less that 2 hours in surgery compared with 55 percent of the privately insured women (Table 13).

Intensive Care Unit Admissions:

- *Very few women in either payor group went to an intensive care unit during their hospital stay.* However, only 1 percent of privately insured women required intensive care compared with 4, 3, and 2 percent of Medicaid women in California, Georgia, and Michigan, respectively (Table 13).

Outcomes of Care

Outcomes of care indicators for women undergoing hysterectomies included the occurrence of complications of surgery, deaths, and other outcomes of interest (Figure 8)

Surgical complications:

- *Medicaid-covered women had more surgical complications than their privately insured counterparts.* In California, Georgia, and Michigan, the percentage with complications was 27 percent, 26 percent, and 25 percent, respectively compared with 16 percent, 13 percent, and 17 percent, respectively, among the privately insured women (Table 14).

- *Much of the difference was related to age, ethnicity, severity of the underlying condition, and hospital characteristics.* An adjusted analysis revealed that African-American ethnicity, older age, presence of severe cancer, and urgency of the need for surgery were all directly related to post-surgical complications

Other Outcomes:

- *More Medicaid-covered women in California, Georgia and Michigan needed a blood transfusion* (14 percent, 9 percent, and 9 percent, respectively) than privately insured women in these States (12 percent, 4 percent, and 5 percent, respectively) (Table 14).

- *More privately insured women, who were transfused, used their own (autologous) banked blood than Medicaid-covered women.* For example, 5 percent of Medicaid covered and 9 percent of privately insured women in California had an autologous transfusion (Table 14).

- *Similar proportions of Medicaid-covered and privately insured women had a different diagnosis at time of admission than after surgery according to the postoperative pathology report.* In California and Michigan, for example, 27 percent and 28 percent, respectively, of the Medicaid covered had a different diagnosis after surgery compared with 22 percent and 23 percent, respectively, of the privately insured women (Table 14).

Death:

- *Only four deaths, which were equally distributed between the Medicaid and privately insured occurred in this sample* (Table 14).

Summary: Hysterectomy

The Medicaid-covered women undergoing hysterectomies experienced similar care as privately insured women. However, important differences existed between Medicaid covered and privately insured women undergoing hysterectomy. Medicaid-covered women were admitted more severely ill, and as a result had more complications and required more care. The appropriateness of the medical decision to perform a hysterectomy differed. In California, there were fewer Medicaid covered than privately insured women with a hysterectomy that was deemed inappropriate by the standards developed for this project. In Georgia, however, more Medicaid than privately insured women had hysterectomies judged to be inappropriate.

The Medicaid-covered women undergoing hysterectomy for benign conditions were more seriously ill than their privately insured counterparts. While the differences between the groups varied by State, the Medicaid-covered women had more coexisting illnesses, more surgical complications, and more blood transfusions. These differences occurred despite the fact that the Medicaid-covered women were younger and received comparable care while in the hospital.

The higher level of initial severity increased length of stay and time in surgery, and decreased frequency of having autologous (patient's own banked blood) transfusion may suggest that Medicaid-covered women may delay treatment until the situation becomes more urgent. Lack of information or a usual source of care or behavioral or environmental problems may create barriers to care. The increased frequency and severity of co-existing disease along with the higher level of severity and diagnostic problems were the major factors relating to the increase in surgical complications among the Medicaid group. While these problems did not result in more hospital deaths among the Medicaid-covered women, they resulted in longer hospital stays and more intense care, putting more of a burden on hospital resources.

These results suggest that inpatient care for Medicaid-covered women meets the standards of care established by the experts in the field. However, factors related to accessing care may be causing a higher level of severity of the conditions leading to hysterectomies, resulting in more complications and greater use of hospital resources.

Figure 5

Diagnoses of Women Hospitalized for Hysterectomy in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

Benign tumors

- Adenomyosis (presence of tissue from the inner uterine lining in the uterine muscle)
- Endometriosis (deposits of intrauterine tissue in the abdominal cavity).
- Fibroids (growths of uterine muscle)

Conditions causing pelvic pain, menstrual irregularities and bleeding

- Chronic pain, bleeding
- Chronic pelvic infection
- Conditions of unknown cause

Malignant tumor

- Uterine and endometrial cancer

Prolapsed vagina or uterus

Source: The Medicaid Quality of Care Medicaid Records Study, Expert Physician Panel, 1991. The Health Care Financing Administration

Figure 6

Criteria for Judging the Appropriateness to Perform a Hysterectomy on Women Hospitalized in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

Acute Uterine Bleeding
- Ectopic pregnancy
- Perforation
- Postpartum hemorrhage, uterine inversion or other delivery catastrophe
- Uterine laceration
- Uterine rupture

Adenomyosis
- Presence of symptoms

Cancer
- Hyperplasia
- Metastatic disease
- Preinvasive
- Severity of invasion

Chronic Pelvic Inflammatory Disease
- Number of previous hospitalizations

Chronic Infection

Chronic Pelvic Pain
- Previous laparoscopy
- Previous medical therapy

Endometriosis
- Endometrioma
- Method of detection

Fibroid Tumors
- Bleeding/anemia
- Pelvic pain, pressure or dyspareunia
- Previous medical therapy
- Uterine size

Menopausal status

Non-Bleeding Emergency
- Failed myomectomy
- Septic abortion
- Uterine scar dehiscence

Preferences for future pregnancies

Prolapse
- Presence of symptoms

Recurrent Uterine Bleeding
- Anemia
- Presence of uterine polyps
- Previous medical therapy

Other
- Sterilization
- Stress incontinence

Source: The Medicaid Quality of Care Medicaid Records Study, Expert Physician Panel, 1991. Health Care Financing Administration.

Figure 7
Criteria for Judging the Process of Care for Women Hospitalized for Hysterectomy in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

High probability of immediate serious harm

- Elective surgery not delayed if temperature, heart beat or EKG, blood pressure, breathing or chest x-ray, or potassium or hemoglobin levels abnormal

High probability of delayed serious harm

- At discharge, incision not checked, fever, anemia[1], or rapid heart rate in previous 12 hours, no bowel sounds, or patient not yet eating

Uncertain[2] or low probability of serious harm

- Before surgery there was no physical examination, blood count, EKG (for women with heart disease, diabetes, or hypertension, or >49 years), blood type, or potassium level
- After surgery, patient not mobile
- After surgery there was no daily examination, daily chest examination, blood count, transfusion for low blood count, evaluation of fever or antibiotic for infection
- At discharge, no documentation of instruction for post-hospitalization activity or follow up care

[1] If related to care during hospitalization.
[2] The expert physician panel constructed this category to indicate that the listed factors may not lead to serious harm.

Source: The Medicaid Quality of Care Medicaid Records Study, Expert Physician Panel, 1991. Health Care Financing Administration.

Figure 8
Criteria for Judging the Outcomes of Care for Women Hospitalized for Hysterectomy in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

Complications during surgery
- Bowel injury
- Cardiac/respiratory arrest
- Death
- Fever
- Hemorrhage
- Injury to bladder or ureter
- Low blood pressure
- Myocardial infarction
- Nerve injury
- Stroke

Complications after surgery
- Abdominal wound complications
- Bowel obstruction, paralysis, or perforation
- Cardiac respiratory arrest
- Death
- Deep vein thrombosis
- Drug reaction/toxicity
- Fall in hospital
- Fever
- Hematoma of vaginal incision
- Infection of vaginal incision
- Myocardial infarction
- Phlebitis/Cellulitis caused by IV
- Pneumonia/generalized infection
- Pulmonary edema
- Pulmonary embolism
- Stroke
- Urinary Tract infection

Other Outcomes of Interest
- Anemia caused by blood loss
- Blood transfusion
- Difference between pre-and post-surgical diagnosis
- Unexpected admission to an ICU
- Unexpected return to surgery

Source. The Medicaid Quality of Care Medicaid Records Study, Expert Physician Panel, 1991. Health Care Financing Administration

Table 8

Patient and Hospital Characteristics of 2,425 Medicaid and Privately Insured Women Hospitalized for Hysterectomy in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

Patient and Hospital Characteristics	Medicaid			Privately Insured		
	California	Georgia	Michigan	California	Georgia	Michigan
# of Hospitalizations	396	380	409	415	424	401
% Distribution of Patient Characteristics[1]						
Age						
< 35	27 **	46	41 **	12	20	15
35 - 44	49	41	40	48	48	45
45+	24	14	16	40	32	39
Ethnicity						
Caucasian	35 **	31	67 **	67	71	85
African-American	14	68	30	6	28	9
Hispanic	36	1	2	13	0	0
Asian	10	0	0	5	0	0
Other[2]	5	0	1	8	1	5
Type of Surgery						
Vaginal	27	21	11 **	24	23	17
Abdominal	73	79	89	76	77	83
% Admitted to:						
Public Hospitals[3]	45 **	44 **	13	10	21	11
Teaching Hospitals[3]	44 **	44 **	41	26	12	42
Hospitals with High Staff to Bed Ratio[3, 4]	79 **	76 **	69 **	60	57	88
With a Bedsize > 400[3]	17 **	77 **	36	8	40	36

* Statistically different from the privately insured sample, p-value <0.05

**Statistically different from the privately insured sample, p-value <0.01

[1]Distributions may not add to 100 percent due to rounding.

[2]Other includes American Indian, Alaskan Native, Black Hispanic, White Hispanic, and missing (> 01%).

[3]Classification of hospitals based on American Hospital Association Annual Survey, 1991 data.

[4]Represents the ratio of hospital employees who give direct patient care to the number of patient beds.

Sources. 1. The Medicaid Quality of Care Medical Records Study, 1991. The Health Care Financing Administration.
2. Classification based on American Hospital Association Annual Survey, 1991 data.

Table 9

Appropriateness of the Decision to Perform a Hysterectomy on 2,425 Medicaid and Privately Insured Women in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study.

	Medicaid			Privately Insured		
Appropriateness Indicator	California	Georgia	Michigan	California	Georgia	Michigan
# of Hospitalizations[1]	348	354	384	405	407	381
% Distribution of Hysterectomies Considered:						
Inappropriate	20 *	36 **	23	27	26	24
Equivocal	19	26	21	17	20	18
Appropriate	62	38	56	56	54	58

* Statistically different from the privately insured sample, p-value <0.05

**Statistically different from the privately insured sample, p-value <0.01

[1]One hundred forty five with missing data needed to rate severity. From Medicaid: 51 (13 percent) from California, 27 (7 percent) from Georgia, and 25 (6 percent) from Michigan. From the privately insured: 8 (2 percent) from California, 17 (4 percent) from Georgia, and 22 (5 percent) from Michigan

Source: The Medicaid Quality of Care Medical Records Study, 1991. Health Care Financing Administration.

Table 10

Severity of Patient Diagnoses Leading to Hysterectomy among 2,425 Medicaid and Privately Insured Women in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

	Medicaid				Privately Insured			
	Level of Severity							
Diagnoses by State	Mild	Moderate	Severe		Mild	Moderate	Severe	
% Distribution of of Women in California with [1,2]:								
Cancer	28	70	3		28	72	0	
Benign Tumors	18	50	33		28	42	30	
Pain/Bleeding/Menstrual Problems	36	21	43		50	7	43	
Prolapse	32	52	16		43	37	20	
Total	26	50	24 *	100	34	41	24	100
% Distribution of Women in Georgia with [1,2]:								
Cancer	34	59	7		36	59	5	
Benign Tumors	16	52	32 *		28	46	26	
Pain/Bleeding/Menstrual Problems	43	18	38		53	13	34	
Prolapse	58	32	10		48	49	2	
Total	29	44	27 **	100	37	43	19	100
% Distribution of Women in Michigan with [1,2]:								
Cancer	5	89	6		5	89	5	
Benign Tumors	20	54	26 *		34	48	18	
Pain/Bleeding/Menstrual Problems	49	16	34		60	15	25	
Prolapse	42	48	10		49	40	11	
Total	28	50	23 **	100	38	45	16	100

* Statistically different from the privately insured sample, p-value <0.05.

**Statistically different from the privately insured sample, p-value <0.01.

[1]One hundred forty five with missing data needed to rate severity: From Medicaid: 51 (13 percent) from California, 27 (7 percent) from Georgia, and 25 (6 percent) from Michigan. From the privately insured: 8 (2 percent) from California 17 (4 percent) from Georgia, and 22 (5 percent) from Michigan.

[2]The percentages add to 100 (horizontally) for each payer group excluding missing.

Source: The Medicaid Quality of Care Medical Records Study, 1991. Health Care Financing Administration.

Table 11

Conditions Leading to Surgery and Underlying Chronic Diseases among 2,425 Medicaid and Privately Insured Women Hospitalized for Hysterectomy in California in 1991. The Medicaid Quality of Care Medical Records Study

	Medicaid			Privately Insured		
Severity Indicators:	California	Georgia	Michigan	California	Georgia	Michigan
# of Hospitalizations	396	380	409	415	424	447
% of Women with:						
> 1 Reason for Surgery	30	23 **	34	36	36	34
Coexisting Conditions	29 *	39 **	36	21	23	28

* Statistically different from the privately insured sample, p-value <0.

**Statistically different from the privately insured sample, p-value <0.01

Source: The Medicaid Quality of Care Medical Records Study, 1991. Health Care Financing Administration

Table 12

Process of Care for 2,425 Medicaid and Privately Insured Women Hospitalized for Hysterectomy in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

	Medicaid			Privately Insured		
Process of Care Indicators	**California**	**Georgia**	**Michigan**	**California**	**Georgia**	**Michigan**
# of Hospitalizations	396	380	409	415	424	401
% with Care that Could Lead to a:						
High Probability of Immediate Serious Harm	2	2	1	1	1	2
High Probability of Delayed Serious Harm	10	9 *	6	13	14	4
Uncertain or Low Probability of Serious Harm	74 **	66 **	79 **	86	79	87

* Statistically different from the privately insured sample, p-value <0.05

**Statistically different from the privately insured sample, p-value <0.01

Source: The Medicaid Quality of Care Medical Records Study, 1991. Health Care Financing Administration.

Table 13

Length of Stay and Intensive Care Unit Admissions among 2,425 Medicaid and Privately Insured Women Hospitalized for Hysterectomy in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

	Medicaid			Privately Insured		
Intensity of Care Indicators	California	Georgia	Michigan	California	Georgia	Michigan
# of Hospitalizations	396	380	409	415	424	401
# of Vaginal Hysterectomies	106	78	43	99	98	67
% Distribution of Length of Stay in Days among Women Hospitalized for Vaginal Hysterectomy:						
0 - 3	28	17 *	21	26	24	27
3	40	32	40	44	49	45
4	14	32	16	21	16	13
5 or More Days	18	19	23	8	10	15
% Distribution of Hours Spent in Surgery among Women Undergoing Vaginal Hysterectomy:						
0 - 2	31 **	51	47	55	63	39
2 - 3	29	33	26	31	20	45
3 or More	39	15	28	14	16	16
# of Abdominal Hysterectomies	290	302	366	316	326	334
% Distribution of Length of Stay in Days among Women Undergoing Abdominal Hysterectomy:						
0 - 3	37 **	12 **	35 **	52	33	37
4	32	36	32	34	39	39
5 - 7	22	35	20	13	23	20
8 or More	9	19	12	1	5	4
% Distribution of Hours Spent in Surgery among Women Hospitalized for Abdominal Hysterectomy:						
0 - 2	30 **	39 *	40 *	46	52	43
2 - 3	45	32	39	40	35	47
3 - 4	14	15	15	9	10	8
4 or More	11	13	6	4	3	2
% Admitted to an Intensive Care Unit	4 *	3 *	2 *	1	1	1

* Statistically different from the privately insured sample, p-value <0.05

**Statistically different from the privately insured sample, p-value <0.01.

Source: The Medicaid Quality of Care Medical Records Study, 1991. Health Care Financing Administration.

Table 14

Outcomes of Care among 2,425 Medicaid and Privately Insured Women Hospitalized for Hysterectomy in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study.

	Medicaid			Privately Insured		
Outcomes of Care Indicators	California	Georgia	Michigan	California	Georgia	Michigan
# of Hospitalizations	396	380	409	415	424	401
% of Women With:						
Surgical Complications	27 **	26 **	25 **	16	13	17
Other Outcomes:						
Transfusion	14 **	9 **	9 **	12	5	5
Autologous Transfusion[1]	5	0	1	9	2	3
Different Pre- and Post-Surgery Diagnosis	27	18	28	22	19	23
# of Deaths						
Related to Surgery	0	1	1	0	1	1

* Statistically different from the privately insured sample, p-value <0.05

**Statistically different from the privately insured sample, p-value <0.01

[1]Tranfusion of patient's own blood.

Source: The Medicaid Quality of Care Medical Records Study, 1991. Health Care Financing Administration.

Complicated Labor and Delivery

Characteristics of Women With Complicated Labor and Delivery

The study sample consisted of 1,241 Medicaid covered and 1,137 privately insured women who delivered an infant with a gestational age greater than 28 weeks. The total sample was 2,378 women. These women had one of the following complicating conditions: multiple births, malpresentation (breech or other), dysfunctional labor (labor did not progress), fetal distress (abnormal fetal heart rate or oxygenation), preterm labor, placenta previa (placenta was near the birth canal), placenta abruption (bleeding placenta), umbilical cord prolapse, previous cesearean section, toxemia, or maternal herpes.

Age:

- *Women in the Medicaid group were considerably younger.* In California, Georgia, and Michigan, more Medicaid covered women were under age 20 and fewer were 30 years or older than privately insured women. For example, in Georgia 26 percent of Medicaid covered compared with 3 percent of the privately insured women were under age 20. In California, 25 percent of the Medicaid covered compared with 53 percent of the privately insured women were over age 29 (Table 15).

Ethnicity:

- *The ethnic distribution was more diverse among Medicaid covered women.* In California, 55 percent of the Medicaid covered women were Hispanic compared with 20 percent of the privately insured. In Georgia, African-American women represented the majority of the deliveries among the Medicaid group (61 percent compared with 25 percent of privately insured). In Michigan, Caucasians were the predominant group, but there were more African-American women (39 percent) in Medicaid group compared with privately insured (10 percent) (Table 15).

Pregnancy history:

- *Both Medicaid and privately insured women had similar pregnancy histories.* The percent of Medicaid covered women having their first delivery ranged from 26 percent to 31 percent, and for privately insured women, 28 percent to 33 percent. Slightly more Medicaid-covered women in California had cesearean sections (Table 15).

Type of delivery:

- *Medicaid covered women had fewer cesarean sections,* 55 percent and 51 percent, respectively, in California and Georgia, compared with 67 percent and 66 percent, respectively, among privately insured women (Table 15).

Hospital Characteristics

- *More Medicaid covered women delivered in public hospitals.* Forty five, 39, and 14 percent of Medicaid women delivered in public hospitals in California, Georgia and Michigan, respectively compared with 6, 27, and 9 percent of the privately insured women.

- *There was no consistent pattern for the other hospital characteristics.* In California, 41 percent of Medicaid women delivered in teaching hospitals and 71 percent in hospitals with a high staff to bed ratio compared with privately insured women (29, and 54 percent, respectively). In Georgia, more Medicaid covered women delivered in teaching (37 percent) hospitals than privately insured women (and 21 percent). Fewer Michigan Medicaid covered women were in hospitals with a high staffing ratio (78 percent versus 89 percent of privately insured women) or large (>400 beds) hospitals (37 versus 45 percent of privately insured women) (Table 15).

Appropriateness

Assessment of the appropriateness of the decision to perform a cesarean section versus vaginal delivery consisted of a three-level scale, inappropriate, equivocal, and appropriate, for each condition listed above. The judgement of appropriateness was based on the imminence of a delivery and the severity of a presenting condition. Both maternal and fetal factors were included for the appropriateness decision. (Figure 9).

Appropriateness of decision to perform a cesarian section or vaginal delivery:

- *The majority of cesearean section and vaginal deliveries were appropriate for both Medicaid covered and privately insured women.* Fewer than 10 percent of the delivery decisions were inappropriate. The decision to delivery vaginally or by cesarean section was also similar among Medicaid and privately insured women. In California, Georgia, and Michigan, the decision was equivocal for 21 percent, 25 percent, and 30 percent, respectively, of the Medicaid-covered women and 29 percent, 27 percent, and 31 percent, respectively, of the privately insured women (Table 16).

Severity

Severity assessment comprised three components: level of severity of the underlying condition complicating the labor and delivery, presence of preventable risk factors that may be related to delivery complications, and presence of coexisting conditions. (Figure 9).

Severity of the complicating condition:

- *More Medicaid covered women had severe delivery complications at the time of admission than privately insured in California and Georgia.* In California and Georgia, 28 percent of the complications were categorized severe by the expert panel's criteria, compared with 19 percent among the privately insured. This difference was not present in Michigan (Table 17).

- *Most of the differences were in the dysfunctional labor and fetal distress categories.* In both California and Georgia, 71 percent of Medicaid covered women with dysfunctional labor were in the severe category. Among the privately insured women, 54 and 53 percent, respectively, were in the severe category. In Georgia, there were more cases of severe fetal distress among the Medicaid covered women: 25 percent compared with 15 percent among the privately insured women. In Michigan, slightly fewer Medicaid-covered women with a prior cesarean section were in the mild category (24 percent) compared with the privately insured women (36 percent) (Table 17).

Presence of preventable risk factors

Anemia:

- *More Medicaid covered women than privately insured were anemic.* In Georgia, the State with the highest percentage of women with anemia, 51 percent of the Medicaid covered women were anemic, compared with 34 percent of the privately insured. Among California and Michigan Medicaid covered women, 33 and 42 percent, respectively, were anemic compared with 26 and 29 percent, respectively, of the privately insured women (Table 18).

Drugs and Alcohol:

- *The percentage of Medicaid covered women who used drugs and alcohol was higher than their privately insured counterpart.* Eleven percent in California, 9 percent in Georgia, and 16 percent in Michigan compared with only 1 to 2 percent of the privately insured women had reports of drug or alcohol use during pregnancy (Table 18).

Smoking:

- *Medicaid covered women smoked more often than their privately insured counterparts.* This was most striking in Michigan where 44 percent of Medicaid covered women smoked compared with 27 percent of the privately insured women. The next highest frequency of smoking was among Georgia Medicaid covered women (28 percent) where the prevalence of smoking was more than twice as high as their privately insured counterparts (12 percent) (Table 18).

Sexually transmitted diseases:

- *The number of women with a sexually transmitted disease was low.* However, there were a small number of Medicaid covered women in Georgia (6 percent) and Michigan (3 percent) with sexually transmitted diseases compared with no cases in the privately insured group in those States (Table 18).

Any risk factor:

- *More Medicaid covered women had more than one preventable risk factor than their privately insured counterparts.* In California, Georgia and Michigan, 18, 31 and 33 percent, respectively of the Medicaid covered women had more than one risk factor, compared with 5, 12 and 14 percent, respectively, among the privately insured (Table 18).

Coexisting conditions:

- *Medicaid covered and privately insured women had a similar number of relevant coexisting conditions.* Between 19 and 28 percent of Medicaid and privately insured women had a coexisting chronic condition (Table 18).

Process of Hospital Care for Women with Complicated Deliveries

The quality of the process of care was measured by whether there was any care that could result in a high probability of serious immediate or delayed harm, or uncertain or low probability of serious harm. Figure 10 outlines the standards of care that determined the quality of the process of care.

Care that could lead to a high probability of serious immediate or delayed harm:

- *Overall, there were few differences in the proportion of Medicaid covered and privately insured women experiencing care that could lead to either immediate or delayed serious harm.* Eleven, 14, and 11 percent of Medicaid covered women in California, Georgia, and Michigan, respectively, experienced hospital care that could lead to immediate serious harm, compared to 8, 14, and 12 percent, respectively of the privately insured women. Similarly, 5, 10, and 7 percent of Medicaid covered women in California, Georgia, and Michigan, respectively, experienced hospital care that could lead to delayed serious harm, compared to 3, 8, and 6 percent, respectively of the privately insured women (Table 19).

Care that could lead to uncertain or low probability of serious harm:

- *Many of the women in both payor groups experienced care that could lead to an uncertain or low probability of serious outcome.* The only difference between payor

groups was in Georgia, where Medicaid covered women experienced this type of care was 47 percent compared with 35 percent for privately insured women (Table 19).

Intensity of Care

Intensity of care was measured by the length of the hospital stay and level of anesthesia used for vaginal and cesarean deliveries.

Length of Hospital Stay:

- *The length of stay for Medicaid-covered women delivering vaginally was similar to privately insured.* An exception to this was in Georgia where more (18 percent) Medicaid-covered women were discharged in 1 day compared with the privately insured group (8 percent) (Table 20).

- *The distribution of length of stay among the Medicaid group differed from that of privately insured in two States.* In Georgia, fewer women stayed 2 days (25 percent) and more women stayed 5 or more days (32 percent) compared with the privately insured women (40 percent and 17 percent, respectively) (Table 20).

Anesthesia:

- *Fewer Medicaid covered women in all three States had epidural anesthesia.* For example, in Michigan, 17 percent of Medicaid women who had a vaginal delivery had an epidural compared with 26 percent of privately insured women; and in Georgia, 40 percent of Medicaid women who had cesarean sections had an epidural, compared with 77 percent of privately insured women in that State (Table 20).

- *More Medicaid covered women had a vaginal delivery without anesthesia.* For example, 40 percent of Michigan Medicaid covered women delivered without epidural or local anesthesia compared with 10 percent of privately insured women (Table 20).

- *More Medicaid covered women than privately insured in all three States had general anesthesia for a cesarean section.* This was especially true in Georgia, where 38 percent of Medicaid covered women who had cesarean sections had general anesthesia, compared with 17 percent of the privately insured women (Table 20).

Outcomes of care

Outcomes indicators included seizures, sepsis, pulmonary embolism (in women) and conditions that could lead to brain damage in infants (fetal distress, low APGAR scores, asphyxia). Other important possible outcomes were lacerations, non-life threatening infections, organ injuries, and blood transfusions. Figures 11 and 12 detail these maternal and infant outcomes.

Maternal Outcomes

- *There were few life threatening outcomes for either Medicaid or privately insured women.* Only 1 or 2 percent experienced a life threatening situation. However, there was a difference between California Medicaid (2 percent) and privately insured (1 percent). There were no maternal deaths (Table 22)

- *The most important difference in outcome between the two payor groups was the percentage of preterm deliveries.* Twenty two percent of Medicaid-covered women in Georgia and Michigan delivered prematurely compared with 12 percent in Georgia, and 14 percent in Michigan (Table 22)

Infant Outcomes

- *Medicaid covered infants in California and Michigan experienced a similar proportion of life threatening outcomes as their privately insured counterparts.* In Michigan, for example, 9 percent of the Medicaid infants had life threatening outcomes compared with 8 percent of the privately insured infants. There also were no differences in 5 minute APGAR scores between Medicaid and privately insured infants (Table 22).

- *Five infants died.* Two infants each among the Georgia and the Michigan Medicaid samples, and one infant in the Michigan privately insured sample died (Table 22). In an adjusted analysis, differences in the number of complications, including death, were directly related to the length of gestation and birth weight.

Summary: Complicated Labor and Delivery

Medicaid covered women in California, Georgia, and Michigan who experienced a complicated delivery, differed in their demographic profiles from their privately insured counterpart. The most striking difference was age. On average, more than 80 percent of Medicaid covered women were under age 30, compared to 54 percent of privately insured women. Despite this difference in age, the Medicaid covered women had similar pregnancy histories as the privately insured.

There were no differences between Medicaid and the privately insured groups in the appropriateness of the medical decision to deliver vaginally or perform a cesarean section; the quality of the hospital care was equivalent between the two payor groups. In addition, with the exception of an increased frequency of premature deliveries among the Medicaid-covered women, the number of maternal and infant complications were similar between the Medicaid and privately insured group.

There were differences in the level of severity of the presenting complication between the two payor groups. Medicaid covered women had more severe levels of dysfunctional labor. They also had more preventable risk factors including more anemia, use of alcohol and drugs; and they smoked more than their privately insured counterparts. Medicaid covered women also had more

preventable risk factors per person. Despite this higher level of initial severity and risk, the outcomes of the mothers who delivered full term infants were not significantly different than those of the privately insured group. In addition, outcomes of the infants, including premature infants, did not differ substantially between the two payor groups.

The higher level of severity did not lead to increased use of hospital resources. Medicaid women had fewer cesarean sections that the privately insured women. However, when the Medicaid-covered women had a cesarean section, their length of stay was slightly longer than that of the privately insured women. Medicaid covered women had fewer epidurals (anesthesia affecting only the pelvic region) and less anesthesia if they delivered vaginally.

Most of the increase in severity at admission among the Medicaid covered women was associated with more acute dysfunctional labor, suggesting problems with access when labor begins. The increased prevalence of anemia among these women suggests that there may be differences in the access to or use of prenatal services (Table 22). Fewer Medicaid covered women initiated prenatal care during the first trimester or had more than six prenatal visits (Table 22). Less prenatal care may have been associated with the unacceptably high prevalence of anemia among the Medicaid covered women in this study (Table 22). While there were too few infant deaths overall in the sample to draw any inferences, the fact that there were more infant deaths among the Medicaid sample is consistent with studies that have found associations between sociodemographic and behavioral factors and infant mortality.

Although Medicaid-covered women had more preventable risk factors and less prenatal care, the study indicates that maternal outcomes were similar to privately insured women. Fewer Medicaid covered women had epidural anesthesia for vaginal or cesarean section deliveries, and more had general anesthesia for cesarean sections. Infant outcomes also were similar between the two groups, with the notable exception of increased prematurity. The Medicaid covered women had fewer cesarean sections suggesting that using fewer hospital resources may not affect outcome.

Figure 9

The Appropriateness to Perform a Cesarean Section or Vaginal Delivery Among Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

Dysfunctional Labor
- Arrested/protracted labor
- Inadequate uterine contractions
- Induction
- Failed forceps or vacuum delivery
- Congenital fetal anomaly obstructing labor
- Estimated fetal weight >4,500 g
- Hyperstimulation

Fetal Distress
- Fetal scalp pH
- Heavy meconium
- Imminent delivery
- Slow heart rate

Malpresentation
- Imminent delivery
- Malpresentation converted to vertex
- Malposition of head
- Transverse lie
- Type of breech

Maternal Genital Herpes
- Herpes lesions on other sites
- Imminent delivery
- Positive culture results
- Active genital lesions present
- Prodromal symptoms present

Multiple Gestations
- Types of presentation
- Three or more fetuses
- Imminent delivery

Placental Abruption
- Development of disseminated intravascular coagulopathy
- Presence of bleeding transfusions
- Presence of fetal distress

Placenta Previa
- Proximity to cervix
- Presence of acute bleeding/transfusions
- Type of previa (partial/complete)
- Viability of lungs of preterm

Preterm Delivery
- Estimate of fetal weight
- Imminent delivery
- Presentation of fetus

Previous Cesarean Section
- Imminent delivery
- Number of previous cesarean section(s)
- Reasons for previous cesarean section(s)
- Types of previous cesarean section(s)

Toxemia
- Failure of induction
- Imminent delivery
- Level of dilation
- Severity of preeclampsia
- Status of cervix

Other
- Bleeding/blood transfusions
- Fetal death without maternal complication
- Umbilical cord prolapse

Source: The Medicaid Quality of Care Medical Records Study Expert Physician Panel, 1991 Health Care Financing Administration

Figure 10
Criteria for Judging the Process of Care Criteria for Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991, The Medicaid Quality of Care Medical Records Study

Care leading to a high probability of immediate serious harm

- Antihypertensive medication not given for blood pressure >160/100
- Fetal lung maturity not assessed
- Full term patients with severe toxemia not delivered within 12 hours
- No other physician or resuscitation specialist in delivery room
- Urine not checked for protein or peripheral edema if blood pressure elevated
- Toxemia not diagnosed when signs and symptoms present

Care leading to a high probability of delayed serious harm

- Elevated blood pressure at discharge
- Fever at discharge
- No immune globulin given for Rh-, Coombs- mother and Rh- infant
- Postpartum fever not assessed
- Rapid heart rate at discharge
- Signs of volume depletion without evaluation (if low hematocrit)

Care leading to an uncertain[1] or low probability of serious harm

- Blood pressure not recorded every hour for active labor
- Cervical exams not done at least every 2 hours for dysfunctional labor
- Cervical exams not done every 4 hours for active labor
- Daily postpartum exam not documented by physician, midwife, or nurse practitioner
- 15 minute nursing checks not done in the first postpartum hour
- Hematocrit or hemoglobin not checked
- High forceps delivery performed
- Inappropriate examination for toxemia
- Inappropriate medication given to nursing mother
- Maternal blood type and Rh not documented
- No postpartum hematocrit or hemoglobin
- No follow-up plan documented
- Prenatal care not recorded in medical record
- No platelet or liver function tested for toxemia
- No rubella vaccine given to non-immune women
- Oxytocin not given for inadequate contractions

[1]The expert physician panels constructed this category to indicate that the underlisted factors may not lead to serious harm.

Source: The Medicaid Quality of Care Medical Records Study: Expert Physician Panel, 1991. Health Care Financing Administration.

Figure 11
Criteria for Judging the Maternal Outcomes of Care for Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

Death

Infection
- Abdominal wound infection
- Cellulitis
- Episiotomy infection
- Edometritis
- Pelvic abscess
- Pneumonia
- Septic pelvic thrombophlebitis

Life Threatening
- Cardiopulmonary arrest
- Confirmed pulmonary embolism
- Postpartum hemorrhage
- Seizure
- Sepsis

Mechanical Injury
- Bladder or ureter injury
- Bowel injury
- Cervical laceration
- Third or fourth degree perineal laceration

Other
- Aspiration during anesthesia
- Antibiotics
- Anticonvulsants
- Blood transfusion
- Deep vein thrombosis
- Delivery of preterm infant
- Delivery of low birth weight infant
- Manual removal of placenta
- Return to operating/delivery room
- Vacuum extraction of fetus

Source: The Medicaid Quality of Care Medical Records Study; Expert Physician Panel, 1991. Health Care Financing Administration.

Figure 12
Criteria for Judging the Newborns Outcomes of Care for Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

Death

Infection
- Complication of maternal infection
- Encephalitis
- Gonorrhea
- Hepatitis
- Herpes simplex
- Herpes simplex infection
- Local infection of skin, eye, or mouth
- Osteomyelitis/septic arthritis
- Rubella
- Syphilis
- Toxoplasmosis

Life threatening outcomes
- Asphyxia
- Encephalopathy
- Low APGAR scores
- Seizures Multiple organ system failure
- Sepsis/pneumonia/meningitis-Group B streptococcus. E. Coli. Neisseria gonorrhea

Mechanical trauma
- Abdominal organ damage
- Cephalhematoma
- Laceration
- Nerve injury
- Skull or other fracture
- Subdural/subarachnoid hemorrhage

Respiratory
- Intubation
- Need for assisted ventilation
- Neonatal ICU admission
- Respiratory distress

Other
- Anemia
- Bleeding disorder
- Bronchopulmonary dysplasia
- Discharge status - discharge home, transferred (acute care hospital, chronic care, institution)
- Erythroblastosis fetalis or hydrops fetalis
- Hypoglycemia
- Intraventricular hemorrhage
- Meconium-stained amniotic fluid
- Meconium aspiration
- Stillbirth

Source: The Medicaid Quality of Care Medical Records Study, Expert Physician Panel, 1991. Health Care Financing Administration.

Table 15

Patient and Hospital Characteristics of 2,378 Medicaid and Privately Insured Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

	Medicaid			Privately Insured		
Characteristics	California	Georgia	Michigan	California	Georgia	Michigan
# of Hospitalizations	411	406	424	367	379	391
% Distribution of Patient Characteristics[1]						
Age						
<20	16 **	26 **	20 **	4	3	6
20 - 29	59	57	64	43	52	55
30+	25	17	16	53	46	39
Ethnicity						
Caucasian	29 **	35 **	56 **	60	72	86
African American	8	61	39	7	25	10
Hispanic	55	2	3	20	0	1
Asian	8	2	1	11	2	1
Other[2]	0	0	1	3	2	1
# of Pregnancies[3]						
1	26 *	31	27	28	28	33
2 - 6	68	67	69	69	71	65
>6	6	2	4	2	1	2
% of Women Having a Cesarian Section	55 **	51 **	57	67	66	62
% of Women Admitted to:						
Public Hospitals[4]	45 *	39 *	14 *	6	27	9
Teaching Hospitals[4]	41 **	37 *	45	29	21	50
Hospitals with High:						
Staff to Bed Ratios[4, 5]	71 **	68	78 **	54	70	89
With Bedsize > 400[4]	15 *	52	37 *	11	55	45

* Statistically different from the privately insured sample, p-value <0.05.

**Statistically different from the privately insured sample, p-value <0.01.

[1]Distributions may not add to 100 percent due to rounding.

[2]Other includes American Indian, Alaskan Native, Black Hispanic, White Hispanic, and missing (> .01%).

[3]Includes current pregnancy.

[4]Classification of hospitals bassed on American Hospital Association Annual Survey, 1991 data.

[5]Represents the ratio of hospital employees who give direct patient care to the number of patient beds.

Sources: 1. The Medicaid Quality of Care Medical Records Study, 1991. Health Care Financing Administration.

2. American hospital Association Annual Survey, 1991.

Table 16

Appropriateness of Performing a Caesarean Section or Vaginal Delivery among 2,378 Medicaid and Privately Insured Women Hospitalized for Complicated Deliveries in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

	Medicaid			Privately Insured		
Appropriateness Indicators	California	Georgia	Michigan	California	Georgia	Michigan
# of Hospitalizations	355	312	334	319	318	332
% Distribution of Type of Delivery Considered.						
Inappropriate	7	7	4	6	8	7
Equivocal	21	25	30	29	27	31
Appropriate	72	69	66	66	65	62

[1]Four hundred eight (17 percent) of the complicated labor and delivery patients were missing data needed to assess appropriateness. In the Medicaid group - 56 (14 percent) in California, 94 (23 percent) in Georgia, and 90 (221 percent) in Michigan were missing. In the privately insured group - 48 (15 percent) in California, 61 (19 percent) in Georgia, and 59 (18 percent) in Michigan were missing.

* Statistically different from the privately insured sample, p-value <0.05

**Statistically different from the privately insured sample, p value <0.01

Source The Medicaid Quality of Care Medical Records Study,1991. Health Care Financing Administration.

Table 17

Severity of the Patient Diagnoses of 2,378[1] Medicaid and Privately Insured Women Hospitalized for Complicated Deliveries in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

	Medicaid				Privately Insured			
	Level of Severity							
Diagnoses by State	**Mild**	**Moderate**	**Severe**		**Mild**	**oderat**	**Severe**	
% Distribution of Women in California with [2]								
Prior Cesarian Section	17	79	4		30	67	3	
Dysfunctional Labor	15 **	15	71		10	36	54	
Fetal Distress	8	79	13		12	76	12	
Malpresentation	2	98	0		2	98	0	
Multiple Births	57	29	14		67	33	0	
Other	24	59	18		30	60	10	
Total	14 *	57	28	100	18	62	19	100
% Distribution of Women in Georgia with [2]								
Prior Cesarian Section	31	66	3		27	72	1	
Dysfunctional Labor	8 *	21	71		17	30	53	
Fetal Distress	16	59	25		13	73	15	
Malpresentation	6	94	0		0	100	0	
Multiple Births	25	75	0		50	50	0	
Other	17	54	29		42	42	16	
Total	17 *	54	28	100	19	62	19	100
% Distribution of Women in Michigan with [2]								
Prior Cesarian Section	24 *	75	2		36	62	2	
Dysfunctional Labor	11	35	54		20	31	49	
Fetal Distress	8	76	16		10	67	22	
Malpresentation	2	98	0		0	100	0	
Multiple Births	50	50	0		43	57	0	
Other	22	39	39		11	33	56	
Total	14	66	19	100	20	59	21	100

* Statistically different from the privately insured sample, p-value <0.05.

**Statistically different from the privately insured sample, p-value <0.01.

[1]Four hundred eight (17 percent) of the complicated labor and delivery patients were missing data needed to assess appropriateness. In the Medicaid group - 56 (14 percent) in California, 94 (23 percent) in Georgia, and 90 (21 percent) in Michigan were missing. In the privately insured group - 48 (15 percent) in California, 61 (19 percent) in Georgia, and 59 (18 percent) in Michigan were missing.

[2]Percentages total to 100 horizontally.

Source: The Medicaid Quality of Care Study, Medical Records Data, 1991. Health Care Financing Administration.

Table 18

Preventable Risk Factors among 2,378 Medicaid and Privately Insured Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study.

	Medicaid			Privately Insured		
Risk Factors	**California**	**Georgia**	**Michigan**	**California**	**Georgia**	**Michigan**
# of Hospitalizations	411	406	424	367	379	391
% of Women with Anemia	33 *	51 **	42 **	26	34	29
% of Women Who:						
Used Drugs or Alcohol	11 **	9 **	16 **	2	1	2
Smoked Cigarettes	17 **	28 **	44 **	5	12	27
Had Any Sexually Transmitted Dis	1	6 *	3	1	0	0
% Distribution of # of Risk Factors per Woman:						
None	47 **	25 **	24 **	59	46	43
One	36	45	44	35	42	43
Two or More	18	31	33	5	12	14
% of Women with Any Relevant Coexisting Condition	23	20	24	19	28	26

* Statistically different from the privately insured sample, p-value <0.05

** Statistically different from the privately insured sample, p-value <0.01

Source: The Medicaid Quality of Care Medical Records Study, 1991. Health Care Financing Administration.

Table 19

Process of Care for 2,378 Medicaid and Privately Insured Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

	Medicaid			Privately Insured		
Process of Care Indicators	**California**	**Georgia**	**Michigan**	**California**	**Georgia**	**Michigan**
# of Hospitalizations	411	406	424	367	379	391
% of Women with Care that Could Lead to a:						
High Probability of Immediate Serious Harm	11	14	11	8	14	12
High Probability of Delayed Serious Harm	5	10	7	3	8	6
Uncertain or Low Probability of Serious Harm	40	47 **	56	40	35	54

* Statistically different from the privately insured sample, p-value <0.05

** Statistically different from the privately insured sample, p-value <0.01

Source: The Medicaid Quality of Care Medical Records Study, 1991. Health Care Financing Administration.

Table 20

Intensity of Care Indicators for 2,378 Medicaid and Privately Insured Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study.

	Medicaid			Privately Insured		
Intensity of Care Indicators	California	Georgia	Michigan	California	Georgia	Michigan
# of Hospitalizations	411	406	424	367	379	391
# of Vaginal Deliveries	187	197	182	123	127	148
% Distribution of Length of Stay in Days among Women Delivering Vaginally:						
1	32	18 *	15	28	8	11
3	11	24	20	10	27	20
4 or More Days	10	14	10	5	11	11
% Distribution of Length of Stay in Days among Women Delivering by Cesarean Section:						
1 - 2	15 *	2 **	4	8	2	4
3	54	25	34	60	40	44
4	21	41	40	27	41	32
5 or More Days	10	32	22	5	17	20
Median Days in Hospital for:						
Vaginal Deliveries	2	2	2	2	2	2
Cesarean Sections	3	4	4	3	4	4
% Distribution of Type of Anesthesia For Women with:						
Vaginal Delivery						
Epidural	32 **	31 **	17 **	53	56	26
Local	40	45	43	31	34	64
Other[1]	28	23	40	17	10	10
Cesarean Section						
Epidural	32 **	40 **	19 *	57	77	22
Spinal	40	22	53	26	6	60
General	28	38	28	17	17	18

* Statistically different from the privately insured sample, p-value <0.05.

**Statistically different from the privately insured sample, p-value <0.01.

[1]No asnesthesia was given, however this category did not exclude receiving pain medication.

Source: The Medicid Quality of Care Medical Records Study, 1991. Health Care Financing Administration.

Table 21

Outcomes of Care for 2,378 Medicaid and Privately Insured Women and Infants Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

	Medicaid			Privately Insured		
Outcome of Care Indicators	California	Georgia	Michigan	California	Georgia	Michigan
# of Total Hospitalizations	411	406	424	367	379	391
% of Women with a Life Threatening Outcome	2 *	2	2	1	1	1
% of Women with Other Outcomes Including:						
Laceration or Infection	9	10	9	6	9	10
Having a Blood transfusion	1	2	2 *	2	1	1
Receiving an Antibiotic	18	13	15	17	19	20
Having a Premature Infant	16	22 **	22 **	13	12	14
# of Maternal Deaths:	0	0	0	0	0	0
% of Infants with a Life Threatening Outcome	8	11	9	6	6	8
% of Infants with Other Outcomes Including:						
Having an APGAR Score <4 at 5 Minutes	0	1	1	0	0	0
Having any Complication of Prematurity	2	5	5	3	3	3
# of Infant Deaths	0	2	2	0	0	1

* Statistically different from the privately insured sample, p-value <0.05

**Statistically different from the privately insured sample, p-value <0.01.

Source: The Medicaid Quality of Care Medical Records Study, 1991. Health Care Financing Administration.

Table 22

Prenatal Care for 2,378 Medicaid and Privately Insured Women Hospitalized for Complicated Delivery in California, Georgia, and Michigan in 1991. The Medicaid Quality of Care Medical Records Study

	Medicaid			Privately Insured		
Prenatal Care	California	Georgia	Michigan	California	Georgia	Michigan
# of Hospitalizations	411	406	424	367	379	391
% Distribution of Onset of Prenatal Care per Woman:						
First Trimester	28 **	26 **	25 **	78	71	62
Second Trimester	35	27	23	10	9	13
Third Trimester	22	14	10	5	4	2
None	3	3	4	0	1	0
Missing	11	30	38	7	15	24
% Distribution of # of Prenatal Visits per Woman.						
0 - 3	17 **	10 **	11 **	4	2	3
4 - 6	23	17	12	7	4	9
> 6	53	48	53	78	84	67
Missing	8	24	25	11	9	21

* Statistically different from the privately insured sample, p-value <0.05

**Statistically different from the privately insured sample, p-value <0.01

Source: The Medicaid Quality of Care Medical Records Study, 1991. Health Care Financing Administration.

Study Conclusions

The demographic characteristics of the Medicaid patients and the hospitals providing services differed from the privately insured. Medicaid-covered children in two States and the women in all three States were younger and represented more minority groups than their privately insured counterparts. In general, Medicaid women and children were treated more frequently in public hospitals, teaching hospitals, and hospitals with large bed capacities.

The appropriateness of medical decisions to hospitalize a child with asthma, perform a hysterectomy, and do a cesarean section on a woman with labor and delivery complications was comparable between Medicaid and privately insured children and women. The study also revealed that once hospitalized, Medicaid-covered children with pediatric asthma, women undergoing hysterectomy, and women with labor and delivery complications received a level of care that was similar to that experienced by privately insured children and women. Most importantly, outcomes of care were essentially similar between the two payor groups, in each condition, and across the three States.

At time of admission, the Medicaid patients were more severely ill. Medicaid-covered children admitted with asthma had already had more hospital admissions than their privately insured counterparts. Women on Medicaid undergoing hysterectomies with nonmalignant conditions were admitted more acutely ill. Similarly, Medicaid-covered women with complicated labor and delivery had more emergent complications and more preventable risk factors than the privately insured. This increase in severity at admission suggests that the Medicaid and privately insured women and children in this sample may not be accessing care in as timely and appropriate manner as their privately insured counterparts.

As a result, there were differences in outcomes that were not related to the quality of care provided to Medicaid-covered patients during the hospitalization. For example, Medicaid-covered women undergoing hysterectomy suffered more complications than privately insured women. However, this finding was related directly to the both the severity of the underlying condition at the time of admission and sociodemographic factors such as age and race. As a result, the Medicaid patients with hysterectomies had longer hospital stays and slightly more admissions to intensive care units. There also were more premature births among Medicaid-covered women admitted with labor and delivery complications than among privately insured women. Despite this, there were no substantial differences between outcomes of the infants of Medicaid and privately insured women.

The study included three States. Because the States' populations and programs differed, the results may not necessarily be comparable across the three States. In addition, the three study States may not fully reflect the experience in the nation. Moreover, the study was not designed to evaluate differences in quality of care between managed care and fee-for-service in the two payor groups. However, at the time of the study managed care was prevalent in California and not in Georgia and Michigan. The higher level of severity found among California Medicaid and privately insured children admitted for pediatric asthma may reflect the impact of managed care in that State.

Many of the comparisons of the indicators varied among States. For example, Medicaid covered women in California had more appropriate hysterectomies than their privately insured counterparts, while in Georgia, Medicaid covered women had more inappropriate hysterectomies than privately insured women. In addition indicators that were similar for both payor groups in a State differed in other States. For example, asthma hospitalizations for moderate to severe cases were about twice as frequent in California as in Georgia and Michigan, and in Michigan, the proportion of both Medicaid covered and privately insured women with complicated deliveries who smoked was higher than in the other two States.

In conclusion, the results of this study indicate that Medicaid-covered women undergoing the common procedure of hysterectomy or with conditions that complicate labor and delivery, and children hospitalized with asthma receive care that is adequate and compares favorably with care received by privately insured patients. Differences in severity of the condition at the time of admission, and use of hospital resources, and complications among the Medicaid patients may be directly attributable to the greater burden of disease among these vulnerable populations.

REFERENCES

1. Health Care Financing Administration. *Interim Report to Congress, Patterns of Health Care Utilization in the Nonelderly Medicaid Population of Selected States.* NTIS Pub. No. 1992.

2. Omnibus Budget Reconciliation Act of 1986 Section 9432 State Utilization Review System (c), Public Law 99-509

3. Health Care Financing Administration. *Interim Report to Congress, Patterns of health Care Utilization in the Nonelderly Medicaid Population of Selected States.* 1992.

4. "Providing for reconciliation pursuant to section 2 of the concurrent resolution on the budget for fiscal year 1987" House of Representatives, 99th Congress, 2nd Session. Conference Report 99-1012, H.R.5300 October 17, 1986, 202,203

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6. Health Care Financing Administration. *Interim Report to Congress: Patterns of Health care Utilization in the Nonelderly Medicaid Population of Selected States.* NTIS N. PB93-184836. Washington, 1992.

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Appendix A

APPENDIX

LEGISLATIVE HISTORY

Since the inception of the Medicare and Medicaid programs in 1965 (Social Security Amendments of 1965 [Public Law 89-97]), the Federal Government has placed a priority on ensuring high quality medical care for its enrollees. Medicaid program changes aimed at promoting access, appropriate use, and quality care are identifiable in major federal legislation. In 1981, legislation widened the scope for Medicaid demonstration projects, which led to an evaluation of the quality of care. Later, legislation mandated the Health Care Financing Administration (HCFA) to develop and implement a quality assurance system for Medicare, and study the quality of care provided to Medicaid and other populations[1].

Shortly after the 1981 legislation, HCFA sponsored a demonstration and evaluation of the quality of care provided to Medicaid women and young children. The demonstration tested capitated and non-capitated plans for cost effectiveness. The evaluation showed that the initiation of prenatal care and the frequency of visits improved. However, across all sites and groups, most women had inadequate prenatal care, (greater than eight visits and care initiated in the second trimester). There were no changes in frequencies of cesarean section rates, delivery complications, or low birth weight (<2,500 grams) newborns[2].

The evaluation found that immunization and vision and hearing screenings of young Medicaid children either rose or remained stable. A consumer satisfaction survey indicated that pregnant women and the parents of young children were satisfied[2].

This evaluation could not identify whether the Medicaid program affected the quality of care received. Cost containment strategies included shortening inpatient stays, controlling procedures and treatments. However, simultaneous changes in the health care industry in general made it impossible to distinguish among population, program, and industry-wide effects on the cost savings[2].

From 1984 through the early 1990's, a series of legislation expanded Medicaid eligibility for pregnant women, families with young children, and for children from birth to adulthood. By 1986, Congress passed expansions and mandates to report on changes in eligibility, utilization, quality of care and, expenditures. Medicaid was separated from Aid to Families with Dependent Children (AFDC) eligibility, and instead linked with federal poverty levels. As a result, eligibility was broadened to cover more poor women and children, allowing States to cover pregnant women and infants from birth to one year of age who met the Federal poverty level standard up to 100 percent.

In the 1986 legislation, Congress mandated the Secretary of the Department of Health and Human Services to "design a system for quality review and assurance in Medicare (Section 9313[G]) and to evaluate a range of methods available to correct or prevent problems of care" (Section

9313[F]). The Health Care Financing Administration sponsored the Institute of Medicine to examine the capacity of standards used for hospitals to meet the Conditions of Participation in Medicare to assure quality of care (Section 9305)[3]. The Institute of Medicine (IOM) reported that before this legislation, no comprehensive evaluation of quality assurance was performed and no comprehensive set of quality of care indicators existed. The IOM found that existing systems within hospitals were meeting the quality assurance requirements for Conditions of Participation in Medicare for that institution. These systems usually incorporated into larger administrative and operating systems that were not applicable to other systems.

There were other aspects of the 1986 legislation that mandated HCFA to conduct two studies that focused on Medicaid.

The first study, High Volume and High Payment Procedures in the Medicaid Population, (Section 9432 [b] of OBRA -86) provided procedures that might be included in second surgical opinion programs. The purpose of this study was to determine which procedures were high volume or high payment procedures and could be candidates for a second opinion program. The goal of the second opinion program was to prevent unnecessary overuse of care while safeguarding medical necessary care. The study identified candidate procedures, ranking them by volume and payment within and across several States. The study recommended that States be provided a list of procedures. The study concluded that, because individual States had different volume and payment rankings, they should choose which procedures should have second opinions[4].

The second study, The Patterns of Health Care Utilization Study (OBRA'86, Section 9432 [a and c]), reported on Medicaid utilization and geographic variation using 1985 and 1986 payer data that report person-level hospital discharge by state in California, Iowa, and New York. A major component of the evaluation explored patterns of use among non-pregnancy-related medical services, those related to surgical conditions and procedures, psychiatric conditions, and pregnancy-related conditions. The selection of pediatric asthma, hysterectomy, and complicated delivery for the current Medicaid Quality of Care Medical Records Study was largely based on the findings of this study[5].

In 1988, the Medicare Catastrophic legislation included mandates for Early and Periodic Screening and Developmental Testing (EPSDT) which were not repealed by OBRA-89. By the time OBRA-89 was legislated, significant changes were written into Title V for the Maternal and Child Health Block Grants. The changes included establishing strong links between Title V, maternal and child health clinics, and the local Medicaid program. States established toll-free hotlines for parents to access information on Medicaid and maternal and child health providers in their local areas. By 1991, twenty-nine States had implemented toll-free lines and the remainder of the States had plans for implementation. The goal was to improve access and quality of care for these vulnerable populations[6,7].

By 1991, the year of the Medicaid Quality of Care Medical Records Study, 96 percent of the States had initiatives in place to address the federal requirements that States have presumptive eligibility determinations for low income pregnant women not enrolled in Medicaid. The presumptive eligibility provision gave hospitals more confidence that they would reimburse for the labor and delivery care of low income women, who at the time of admission, appeared to be eligible but were not enrolled in Medicaid, and were otherwise uninsured. Presumptive eligibility for prenatal care, labor and delivery care provided financial incentives for physicians to accept women who presented for care who were uninsured and poor. The goal was to increase access and maintain and promote quality of care for these women.

Another link between Title V programs and Medicaid was mandated in the OBRA-89 legislation requiring States to have Title V and Medicaid work directly with the EPSDT program to promote continuity of care and quality for children. In many States, inter-agency agreements were made that increased the likelihood that young children would receive the required early periodic screening and any necessary follow up care. With inter-agency agreements in place, these children had a better opportunity to receive coordinated quality care. Most of this legislation existed before 1991, the date of the Medicaid Quality of Care Medical Records Study. Children with asthma may have been benefiting from this legislation before the study.

OBRA-89 (Public Law 101-239) addressed the issue of low provider reimbursements, which were a barrier to access and quality care for pregnant women and children. This legislation required State Medicaid agencies to document that their reimbursements to providers for pregnant women and children were comparable to reimbursements paid by private insurers. The legislation also allowed providers to offer partial EPSDT services, to promote delivery of these services among more providers.

During 1991 the OBRA 1990 (Public Law 101-508) legislation was implemented to expand Medicaid eligibility to all children born after September 30, 1983 up to age 19, whose families' incomes were less than 100% of the federal poverty level. One result of this legislation was that all children living at, or below, this poverty level would become Medicaid eligible by the year 2002. New children would be added annually to the Medicaid rolls and carried throughout their childhood. It was in this context that the Medicaid Quality of Care Medical Records Study was developed.

Endnotes

1. Omnibus Budget Reconcilation Act of 1986 Section 9432 State Utilization Revview System (c), Public Law 99-509

2. Health Care Financing Administration. *Nationwide Evaluation of Medicaid Competition Demonstrations: Quality of Care Study: Vol. 4.* Washington. Office of Research and Demonstrations, HCFA. NTIS No PB 89 209688-AS September 1988

3. Institute of Medicine. Kathleen N Lohr (ed.). *Medicare: A Strategy for Quality Assurance.* Washington, National Academy Press, 1990

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6. The Center for Health Policy Research. *State Implementation of OBRA '89 EPSDT Amendments within Medicaid Managed Care Arrangements.* Washington, D C. The George Washington University, October 1993.

7. Association of Maternal and Child Health Programs. Meeting the Challenge: *A Report on the First State Program Applications for Title V by OBRA '89.* February 1991.

8. Association of Maternal and Child Health Programs. Meeting the Challenge. A Report on the First State Program Applications for Title V as amended by OBRA '89, February 1991.

Appendix B

American
Academy of
Pediatrics

41 Northwest Point Blvd
PO Box 927
Elk Grove Village, IL 60009-0927
Phone 708/228-5005

Dear Hospital Administrator:

This is to express the American Academy of Pediatrics' support for the Medicaid Necessity, Appropriateness and Outcomes of Care Study. By attending several briefings and reviewing a variety of documents, we have familiarized ourselves with the study's goals, objectives and methodology. We believe that the study represents an important effort to examine differences in the nature of care delivered to, and resources required by, Medicaid and non-Medicaid patients. As such, it will likely yield considerable insights for hospitals, physicians and Medicaid policy makers.

My staff and I have also had the chance to acquaint ourselves with several of the key researchers at SysteMetrics who will be involved in the study, and we feel confident that the study will be conducted by highly competent individuals.

In light of the study's importance and SysteMetrics' qualifications for conducting health policy research, I would like to urge you to participate in the study.

Thank you in advance for your cooperation.

Sincerely,

James E. Strain, MD
Executive Director

JES:ms

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American Hospital Association

AHA

840 North Lake Shore Drive
Chicago, Illinois 60611
Telephone 312.280.6000
Cable Address AMHOSP

July, 1992

TO: Chief Executive Officers

The Health Care Financing Administration is conducting the Medicaid Necessity Appropriateness and Outcomes of Care Study. The purpose of the study is to conduct an extensive comparison of the health care rendered to the Medicaid and privately-insured patients.

The American Hospital Association is interested in this study and has been involved in developing the forms and procedures. All information collected will be kept confidential and will be reported only in summary form.

I am confident that the information obtained in this study will be worth the effort expended by your staff.

If you have any questions, please call me at 312/280-6523. Thank you for your cooperation.

Sincerely

Peter Kralovec

Peter Kralovec
Director
Hospital Data Center

AHIMA

AMERICAN HEALTH INFORMATION MANAGEMENT ASSOCIATION

March 30, 1992

Dear Hospital Administrator,

On behalf of the American Health Information Management Association (AHIMA), I wish to express our strong support for the Medicaid Necessity, Appropriateness, and Outcomes of Care Study. Our organization of over 34,000 health information management professionals believes that th[illegible]s an extremely important study.

At the present time many important decisions affecting health care in this country are being made with little or no hard data to support those decisions. AHIMA feels this study will elicit vital information and help all healthcare professionals address the healthcare needs of this country's citizens.

SysteMetrics, the organization responsible for the study, worked diligently to assure that individuals from the all the appropriate healthcare associations were involved in planning the study. AHIMA was one of the organizations that participated developing the data collection instruments and we believe that the result is first rate. We believe that the data collection instruments will enable the health information professionals to collect the required medical records data in an efficient and effective manner.

I hope that your facility will enthusiastically participate in this important study. If we can be of any assistance to you or members of your staff, please do not hesitate to call Barbara Manny, RRA, Policy Analyst at (800) 621-6828 x 242.

Sincerely,

Pamela K Wear RRA.

Pamela K. Wear, RRA
Executive Director

cc: Susan Dowell, MBA, RRA, President
Sandy Bissen, MS, RRA, President-elect
Margaret Montaglione, BS, ART, First Successor Director

pkw

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John T. Kelly, MD, PhD
Director
Office of Quality Assurance &
Healthcare Organizations

515 North State Street
Chicago, Illinois 60610

312 464-5510
312 464-5836 Fax

July 20, 1992

Dear Hospital Administrator, Medical Staff Chairman:

This letter is to express my strong support for, and encourage your hospital's participation in, the "Medicaid Necessity, Appropriateness, and Outcomes of Care Study".

I have reviewed the Study plans, conferred with the SysteMetrics staff who will conduct the study, and discussed the Study with the leaders of the Medical Association of Georgia.

This Study will provide important information about the quality of care provided to Medicaid and non-Medicaid patients in Georgia, and facilitate ongoing discussions regarding the reform of the American health care system. The Study staff have assured me that they will keep the physician and hospital community informed as the project progresses. In addition, the Study staff have proven their ability to maintain strict confidentiality in previous studies, and have assured me that in no instance will individual patients, physicians, or hospitals be identifiable.

I strongly encourage your participation in this Study.

Sincerely,

John T. Kelly, MD, PhD

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY

PETE WILSON, Governor

DEPARTMENT OF HEALTH SERVICES
714/744 P STREET
P.O. BOX 942732
SACRAMENTO, CA 94234-7320

TO: HOSPITAL ADMINISTRATORS

SUBJECT: SUPPORT FOR THE MEDICAID NECESSITY, APPROPRIATENESS, AND OUTCOMES OF CARE STUDY

The purpose of this letter is to request your support for the Medicaid Necessity, Appropriateness, and Outcomes of Care Study. Over the last few months, I have become acquainted with the details of the study, and I am impressed with the study's design and with the degree of rigor that is being applied to ensure its proper execution.

The study is being conducted by the Health Care Financing Administraton and its contractor, SysteMetrics, in response to the Omnibus Reconciliation Act of 1986, which requires the Secretary of Health and Human Services to examine health care provided to Medicaid patients. The study is being performed in two phases. Phase I, which has recently been completed, focused on geographic variations in utilization rates between the Medicaid and non-Medicaid populations in California, Iowa, and New York.

Phase II, on the other hand, will involve analyzing extensive clinical data that will be obtained from hospital medical records in California, Georgia, and Michigan. Specifically, this phase of the study will focus on differences between the Medicaid and non-Medicaid populations with respect to severity of illness upon admission and the intensity of care required, indications for surgery, use of the emergency room, process of care, and outcomes of care, as well as other important dimensions of care.

With regard to confidentiality concerns raised by the study, let me assure you that SysteMetrics has extensive experience in conducting studies that involve medical record reviews, and that I am confident in their ability to preserve patient, physician, and hospital confidentiality.

In closing, I firmly believe that the study will provide crucial information for enhancing the State's Medical program. However, the study's value will be compromised substantially without your institution's support. I therefore hope that you will demonstrate your support for this worthwhile endeavor by agreeing to participate in the study.

Thank you in advance for your cooperation and participation. If you have any questions, please call Mr. Jose Fernandez, Deputy Director, Medical Care Services, Department of Health Services, at (916) 657-5173.

Molly Joel Coye, M.D., M.P.H.
Director

CAHHS California Association of Hospitals and Health Systems
1201 K Street, Suite 800 • P.O. Box 1100
Sacramento, CA 95812-1100

cma California Medical Association
221 Main Street • P.O. Box 7690
San Francisco, CA 94120-7690

July 13, 1992

Hospital Administrator:

This letter of endorsement for the Medicaid Outcomes Study is being written jointly by the California Medical Association and the California Association of Hospitals and Health Systems (CAHHS). We believe that the study could prove to be beneficial and we have been assured that it will be "state of the art."

The study, which was mandated by Congress, will compare outcomes and appropriateness of care under Medicaid in California, Michigan and Georgia. The analysis will concentrate on pregnancy outcomes, hysterectomies and pediatric asthma. In California, it is expected to involve 58 urban hospitals and 15 rural hospitals. While we understand that participation will be voluntary, we hope that hospitals and physicians will cooperate with enthusiasm.

The hospitals will be asked to provide a list of patients admitted for the selected diagnoses. Payer type will be included. From that list the study will select up to 50 patient medical records from the facility for review. The hospital will supply the medical record information either by photocopying the records, allowing a Systemetrics agent to photocopy them or by permitting on site, direct review at the hospital. The method used will be selected by the hospital. Most important, the hospital will be fully reimbursed for its costs of providing the information.

We also understand that throughout this project there will be absolute confidentiality of patient information and that there will be no traceable patient identification in the final products. In addition, compilations of data will be structured to shield the identity of all physicians, patients and hospitals involved in the studies.

Given the purposes of the project, the commitment to confidentiality and the avoidance of an undue burden on hospitals or physicians, the California Medical Association and the California Association of Hospitals and Health Systems (CAHHS) are pleased to endorse this project and to encourage hospitals and physicians to participate. If you have any questions, please contact Marc Lowry at CAHHS (916-552-7552) or Jack Light at CMA (415-882-5125).

Sincerely,

Marc T. Lowry
Finance Director
California Association of Hospitals
and Health Systems (CAHHS)

Jack Light
Jack M. Light
VP, Medical Economics
California Medical Association

State of Georgia
Department of Medical Assistance
Floyd Veterans Memorial Bldg. - West Tower
2 Martin Luther King, Jr. Drive, S.E.
Atlanta, Georgia 30334

Russell B. Toal
Commissioner

May 18, 1992

Dear Hospital Administrator:

Over the last several months, I have become acquainted with the Medicaid Necessity, Appropriateness, and Outcomes of Care Study. I am impressed with the study's design and with the degree of rigor that is being applied to ensure its proper execution. Moreover, SysteMetric's staff is quite experienced in record review studies, and I am confident in their ability to preserve patient, physician, and hospital confidentiality.

I firmly believe that the study will provide crucial information to us in our effort to enhance the state's Medicaid program. However, the study's value will be compromised substantially without your hospital's support. Therefore, I hope you will demonstrate your support for this worthwhile endeavor by agreeing to participate in the study.

Thank you in advance for your cooperation and participation.

Sincerely,

Russ Toal
Commissioner

RT:tp

Georgia Hospital Association
1675 Terrell Mill Road Marietta Georgia 30067 - 404 955-0324

June 30, 1992

Dear Hospital Administrator:

The purpose of this letter is to encourage your support and participation in the Medicaid Necessity, Appropriateness, and Outcomes of Care Study. The Georgia Hospital Association (GHA) staff along with members of the GHA Data Committee have reviewed information on the study and have concluded that it is a sound study and that GHA members should cooperate in making it as worthwhile as possible.

The study is being conducted by the Health Care Financing Administration and its contractor, SysteMetrics, in response to the Omnibus Reconciliation Act of 1986, which requires the Secretary of Health and Human Services to examine health care provided to Medicaid patients. The study is being performed in two phases. Phase I, which has recently been completed, focused on geographic variations in utilization rates between the Medicaid and non-Medicaid populations in California, Iowa, and New York.

Phase II, on the other hand, will involve analyzing extensive clinical data that will be obtained from hospital medical records in Georgia, California, and Michigan. Specifically, this phase of the study will focus on differences between the Medicaid and non-Medicaid populations with respect to severity of illness upon admission and the intensity of care required, indications for surgery, use of the emergency room, process of care, and health outcomes, as well as other important dimensions of care.

With regard to confidentiality concerns raised by the study, SysteMetrics has extensive experience in conducting studies that involve medical record reviews, and they have assured us that extraordinary measures will be taken to preserve confidentiality at all levels (i.e., hospital, physician, and patient).

In closing, I would once again like to encourage your support of the study. GHA will be monitoring closely the study's progress, and we will keep you informed of all important developments. In the meantime, if you have any questions regarding the study, please contact Vi Naylor at 404/955-0324.

Sincerely,

Joseph A. Parker
President

ww

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF SOCIAL SERVICES

235 South Grand Avenue, P.O. Box 30037, Lansing, Michigan 48909

GERALD H. MILLER, Director

June 30, 1992

Dear Hospital Administrator:

The purpose of this letter is to encourage your participation in the second part of a U.S. Health Care Financing Administration (HCFA) study on "Medical Necessity, Appropriateness and Outcomes of Care".

HCFA has contracted with SysteMetrics for this study, the first phase of which was an analysis of limited claims data provided by five states, including Michigan. In phase 1, data were analyzed to identify possible variations in inpatient and outpatient utilization for Medicaid and non-Medicaid populations.

Phase 2 of the study is to begin later this year. This will be an inpatient record abstract and evaluation for certain conditions studied in phase 1. Eleven thousand patient records from 200 hospitals in three states will be selected for review. Included will be 4,000 patient records from 65 Michigan hospitals.

With SysteMetrics, we are writing to request the cooperation of the hospitals in Michigan. SysteMetrics has made the appropriate commitments on confidentiality to HCFA and, of course, no patients will be individually identified in the study. Further, all information developed, including hospital specific information, will be used only for the purposes of the study.

We believe the study will provide important information to us in our future efforts to enhance Michigan's Medicaid program. Issues of process of care and outcomes have not been extensively reviewed in Medicaid programs in any systematic manner. However, the study's value will be compromised substantially without your support. We hope you will agree with us on the importance of this study and will participate in it.

Thank you in advance for your cooperation.

Sincerely,

Vernon K. Smith, Ph.D.,
Director
Medical Services Administration

David A. Seaman,
Executive Director
Michigan Health Care Institute
Michigan Hospital Association

Appendix C

A Study of the Appropriateness, Process of Care, and Outcomes of Medical Care for Medicaid Patients

Contract No: HCFA 500-94-0017
July 1996

Submitted to:

Health Care Financing Administration
Office of Research
7500 Security Boulevard
Baltimore, MD 21244-1850

Submitted by:

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TABLE OF CONTENTS

OVERVIEW 1

INTRODUCTION 4

PART I. BACKGROUND 4
- Medicaid and Quality of Care 4
- The Questions Addressed 5
- Medicaid Program Policy in the Three Study States 6
- Selection of the Medical Conditions Studied 8
- Defining and Measuring Quality of Care 9

PART II. MAJOR FINDINGS 12
1. How do the samples of Medicaid and privately insured patients compare in terms of the patients represented and the hospitals where they receive care? 12
2. How does the quality of hospital care provided to Medicaid and privately insured patients compare? 14
   - —In terms of appropriateness? 14
   - —In terms of process of care? 19
   - —In terms of outcomes of care, or effectiveness of the care rendered? 24
   - —In terms of severity at admission? 29
   - —In terms of service intensity? 33
3. What factors account for differences in outcomes between Medicaid and privately insured patients? To what extent are underlying differences in severity of illness responsible for these differences? To what extent do differences in treatment approaches and the amount of care given account for these differences? 36
4. Do hospitals treat Medicaid patients differently than privately insured patients? 38
5. How do differences in Medicaid program policies found in the three study States influence the quality of care provided to Medicaid patients? 39

PART III. DISCUSSION 40

ACKNOWLEDGMENTS 42

REFERENCES 44

LIST OF TABLES AND FIGURES

Table No

1 Medicaid program characteristics in the three study States ... 7

2 Primary quality of care dimensions addressed by this report and corresponding study indicators ... 9

3 Number (and percent) of hospitalizations in the pediatric asthma cohort, by demographic and hospital characteristics, payer, and State, 1991 ... 13

4 Number (and percent) of hospitalizations in the hysterectomy cohort, by demographic and hospital characteristics, payer, and State, 1991 ... 15

5 Number (and percent) of hospitalizations in the urban complicated delivery-mother cohort, by demographic and hospital characteristics, payer, and State, 1991 ... 16

Figure No

1 Percent of hysterectomies performed for inappropriate reasons: Medicaid and privately insured, 1991 ... 17

2 Percent of inappropriate delivery decisions: Medicaid and privately insured, 1991 ... 18

3 Percent of pediatric asthma cases not complying with process of care criteria, by likelihood of serious harm: Medicaid and privately insured, 1991 ... 20

4 Percent of hysterectomies not complying with process of care criteria, by likelihood of serious harm: Medicaid and privately insured, 1991 ... 21

5 Percent of deliveries not complying with process of care criteria, by likelihood of serious harm: Medicaid and privately insured, 1991 ... 23

6 Percent of pediatric asthma hospitalizations involving adverse outcomes: Medicaid and privately insured, 1991 ... 25

7 Percent of hysterectomies involving surgical complications: Medicaid and privately insured, 1991 ... 26

8 Percent of deliveries involving complications of labor and delivery: Medicaid and privately insured mothers, 1991 ... 27

9 Percent of newborns experiencing complications of labor and delivery: Medicaid and privately insured, 1991 ... 28

10 Percent of pediatric asthma cases by severity at admission: Medicaid and privately insured, 1991 ... 30

11 Average severity of hysterectomy patients: Medicaid and privately insured, 1991 ... 31

12 Percent of deliveries by severity at admission: Medicaid and privately insured, 1991 ... 32

13 Average length of stay, pediatric asthma: Medicaid and privately insured, 1991 ... 34

14 Average length of stay, hysterectomy: Medicaid and privately insured, 1991 ... 35

15 Average length of stay, complicated delivery: Medicaid and privately insured, 1991 ... 36

OVERVIEW

Purpose

The Sixth Omnibus Budget Reconciliation Act of 1986 (PL99-509—Section 9432[i]) required that the Secretary of Health and Human Services conduct a study of the appropriateness, necessity, and effectiveness of selected medical treatments and surgical procedures delivered to Medicaid beneficiaries. More specifically, the intent of the legislation was to encourage research on the quality of care being provided to Medicaid patients. This report describes a very large medical records study that was sponsored by the Health Care Financing Administration (HCFA) in response to this legislation.

Approaches

The Study described in this report involved in-depth review of the medical records of about 10,000 patients in California, Georgia, and Michigan, and compared the actual care described in medical records to standards created by national panels of physician experts. Medicaid patients are more typically poor, disadvantaged, and less educated, a demographic group that historically has had poorer access to health care than have the privately insured. Evidence that these patients are receiving health care similar in quality to that received by privately insured patients would suggest significant success of the Medicaid program.

The study analyzed the hospital management of three conditions important to women and children in the Medicaid population: pediatric asthma, hysterectomy, and complicated delivery. It also studied three dimensions of quality of care relevant to those specified by the legislation. **Appropriateness** focuses on potential overuse of hysterectomy and cesarean section (c-section) and on medical decisions regarding emergency room discharge of children with asthma. **Process of care** examines whether essential elements of care were rendered during evaluation and treatment of each of the selected conditions. **Effectiveness** compares outcomes of treatment between the two populations. The report also compares both **severity at admission** and **intensity of treatment** provided for Medicaid and privately insured patients

Based on results of the Medical Records Study, the major research issue addressed in this report is

- How does the quality of hospital care provided to Medicaid and privately insured patients compare in terms of appropriateness, process of care, outcomes, severity at admission, and service intensity?

Major Findings

Overall, the most important study findings were:

1. *Pediatric Asthma*. Similar quality of care was provided to Medicaid and privately insured patients particularly with respect to appropriateness and treatment outcomes. Across States, there were only four cases that were judged to represent inappropriate admissions: one in each State's privately insured group and one in the Georgia Medicaid group. There were also very few cases involving adverse treatment outcomes, irrespective of State or payer (Medicaid or privately insured). Slightly less treatment complications were found for Medicaid than for privately insured patients in Georgia: 2.1 percent compared to 5.0 percent ($p<.05$).

No differences were found in the number of cases adhering to criteria which, if not complied with, have a high likelihood of resulting in harm to patients. More Medicaid than privately insured patients in all three States did not adhere to one or more criteria with uncertain likelihood of harm (58% and 49% in California, $p<.05$; 72% and 54% in Georgia, $p<.01$; 63% and 56% in Michigan, $p<.05$).

2. *Hysterectomy*. The results for Medicaid and privately insured patients varied by quality indicator. For example, fewer Medicaid than privately insured patients in all three States had care that did not comply with one or more criteria with uncertain likelihood of harm: 74 percent compared to 86 percent in California; 66 percent compared to 79 percent in Georgia, and 79 percent compared to 87 percent in Michigan ($p<.01$ in each case). No important differences were found in the number of cases not complying with criteria with high likelihood of resulting in harm to patients.

By contrast, Medicaid patients in all three States had more surgical complications (27% and 16% in California, $p<.01$; 26% and 13% in Georgia, $p<.01$; 25% and 17% in Michigan, $p<.01$). The most common complications were urinary tract infection, paralytic ileus, and wound complications such as infection and hematoma.

Finally, we found that, adjusting for underlying differences, Medicaid patients in California had a significantly lower rate of inappropriate hysterectomies (by 54 percent) than did privately insured patients.

3. *Complicated Delivery*. The overall rate of inappropriate decision-making (that is, in the choice of vaginal delivery or c-section) was relatively modest, ranging from a low of 3.6 percent for Medicaid patients in Michigan to a high of 7.9 percent for privately insured patients in Georgia. Controlling for underlying differences between Medicaid and privately insured patients, Michigan Medicaid patients were found to have about 55 percent lower odds of an inappropriate delivery type than were the privately insured. The process of care rendered to Medicaid and privately insured patients was similar for all categories of study criteria.

Life-threatening complications such as postpartum hemorrhage occurred in 0.5 to 2.5 percent of cases. Although percentages of newborns with these complications were small in all three States (2.4% of Medicaid and 0.5% of privately insured in California; 2.5% and 1.3% in Georgia, and 1.9% and 0.8% in Michigan), they were higher for California Medicaid newborns than the privately insured ($p<.05$). Differences in rates of other important complications such as accidental lacerations and infections were also statistically significant in California (9.5% for Medicaid compared to 5.7% for privately insured, $p<.05$).

Adjusting for other factors and combining information regarding life-threatening and other important complications of care, results were found to vary by State. No differences in complication rates were found in Michigan. However, the results showed that California Medicaid patients having c-section had a 5.1 times higher odds of complications than privately insured patients. In Georgia, Medicaid patients that delivered vaginally had about half (42%) the risk of a complication compared to privately insured patients—but those having c-section had 1.9 times higher odds.

In summary, the findings for Medicaid and privately insured patients were shown to vary by clinical condition, State, and quality indicator. In general, however, our findings suggest that these Medicaid programs in the early 1990s succeeded in providing care that in many areas was of similar quality to that received by private pay patients.

INTRODUCTION

The Sixth Omnibus Budget Reconciliation Act of 1986 (PL99-509: Section 9432[i]) required that the Secretary of Health and Human Services conduct a study of the utilization of selected medical treatments and surgical procedures by Medicaid beneficiaries to assess their appropriateness, necessity, and effectiveness. More specifically, the intent of the legislation was to encourage research on the quality of care being provided to Medicaid patients.

A previously reported study (Phase I - DHHS, 1991) was initially conducted in response to this legislation. That analysis studied differences between Medicaid and nonMedicaid populations in rates of utilization of inpatient and outpatient services, and how the rates varied among small geographic areas in six States. In general, the overall observed rate of inpatient utilization in the Medicaid population was substantially higher than the rate expected based on nonMedicaid utilization patterns, with the differences being most pronounced for medical compared to surgical conditions. While it was recognized that such differences based solely on utilization data did not necessarily reflect quality of care problems, the Phase I results, nevertheless, highlighted the need for further inquiry.

This report, prompted by the Congressional legislation and Phase I results, describes results of a large medical records study sponsored by the Health Care Financing Administration (HCFA). It is organized in three major sections. Part 1 provides background information regarding the major policy issues studied, characteristics of the Medicaid programs in the three study States, and the approaches taken to study each policy area. Part 2 summarizes important findings of the studies. Part 3 contains discussion of the findings.

PART I. BACKGROUND

Medicaid and Quality of Care

Previous studies indicate that the Medicaid program has increased access to health care services by its enrollees since its enactment (Leicher et al., 1985; Davis and Schoen, 1978; Short and Lefkowitz, 1992). When differences in underlying severity of illness are taken into account, visit rates are comparable to those of other patients (Kleinman et al., 1981; Starfield, 1982; Newacheck, 1988; Newacheck and Starfield, 1988), although Medicaid enrollees tend to receive more of their care from clinics and emergency rooms and less from private physicians' offices.

However, researchers have also described numerous differences in treatment. Medicaid patients appear to receive fewer procedures than privately insured patients. For example, patients admitted for cardiac problems are significantly less likely to receive state-of-the-art care involving coronary artery bypass surgery or angioplasty (Young and Cohen, 1992; Wenneker et al., 1990). Lower procedure rates have been found for Medicaid patients treated at one of 52 Boston hospitals compared to privately insured patients (Weissman and Epstein, 1989). Pneumonia patients have been reported to have fewer radiographic procedures, fewer specialist consultations, and longer lengths of stay than privately insured, but more than uninsured patients (Yergan et al., 1988).

Studies also show that Medicaid patients suffer higher mortality rates than privately insured patients with pneumonia, myocardial infarction (heart attack), and breast cancer (Yergan et al., 1988; Young and Cohen, 1992; Weissman et al., 1992). This is consistent with overall mortality trends that show increasing disparities between income groups in the United States (Pappas et al., 1993).

A number of studies suggest that maternity care for poor women is not comparable to that of the non-poor in terms of access, appropriateness, or effectiveness (Institute of Medicine, 1986; Alan Guttmacher Institute, 1988; Hughes et al., 1987). Only one (Norris and Williams, 1984) of four studies of State data (for California, Georgia, and Tennessee) has shown Medicaid coverage to improve neonatal mortality rates (McCullough, 1988; Piper et al., 1990; Spitz et al., 1983). Medicaid women at high risk of delivery complications are more likely than privately insured women to deliver in hospitals that have no newborn intensive care units. They are also likely to have worse perinatal outcomes than privately insured women (Phibbs, Mark, and Luft, 1993). And Medicaid enrollment delays have been found to cause important delays in the initiation of prenatal care (Howell et al., 1991).

The Questions Addressed

Throughout this report, we compare the quality of care rendered to Medicaid and privately insured patients.

We address five questions:

1. How do the samples of Medicaid and privately insured patients compare in terms of the patients represented and the hospitals where they receive care?

2. How does the quality of hospital care provided to Medicaid and privately insured patients compare in terms of appropriateness, process of care, outcomes, severity at admission, and service intensity?

3. What factors account for differences in outcomes between Medicaid and privately insured patients? Are underlying differences in severity of illness responsible for these differences? Do differences in treatment approaches and the amount of care given account for these differences?

4. Do hospitals treat Medicaid patients differently than privately insured patients?

5. How do differences in Medicaid program policies found in the three study States influence the quality of care provided to Medicaid patients?

The portion of **the Medical Records Study** described by this report compared the quality of care delivered to samples of Medicaid and privately insured patients through a detailed analysis of approximately 10,000 medical records from some 118 hospitals in California, Georgia and Michigan. Recognizing that State Medicaid policies and populations differ importantly, the

results were compiled separately for each State. The study focused primarily on the quality of care provided during the hospital stay, although it also made inferences about the care that preceded that stay. Medicaid patients of all eligibility categories were eligible for inclusion in the study

Panels of nationally respected physician-experts defined the quality of care standards to be studied. We convened face-to-face panel meetings that included representatives of important national professional societies as well as diverse urban and rural sections of the United States. Three panels, each consisting of seven experts, addressed childhood asthma, hysterectomy, and labor and delivery care. In addition, a panel of three experts developed study standards for newborn care.

Medicaid Program Policy in the Three Study States

California, Georgia, and Michigan were selected as study States for several reasons. Most importantly, they provide three geographically diverse populations and comprise more than a fifth of all Medicaid enrollees. They are also among a group of States for which extensive reimbursement information is available for all Medicaid enrollees.

In addition, their Medicaid programs vary in important ways. Table 1 summarizes some of the most important differences among the programs near the time the study data were collected (1991). This table distinguishes between disabled and nondisabled beneficiaries since nondisabled beneficiaries (particularly AFDC-eligibles) presumably comprise the majority of cases sampled by the Medical Records Study [1]

California spent the highest amount on its Medicaid program (about $9 billion across all eligibility groups), and had the largest covered population, but spent less per enrollee ($1,886) than Georgia or Michigan ($2,411 and $2,283 respectively). Georgia had the smallest Medicaid program, serving the fewest recipients and spending less than the other two States overall, but more on average per nondisabled enrollee. California and Michigan covered nearly all optional Medicaid services, whereas Georgia covered fewer than half. All three programs covered outpatient prescription drugs and reimbursed for gynecological checks for healthy women.

Table 1 also shows that all three States had surgical preauthorization policies requiring program approval prior to proceeding with elective surgery. California and Michigan had small copayment policies for drugs and other services associated with their Medicaid programs. In addition, both of these States had managed care programs (in selected areas of the States) which relied heavily on capitation (per-person) for provider payment. Michigan also maintained a non-capitated managed care program. Georgia did not have managed care or co-payments for programs associated with Medicaid.

[1] Data for 1987-1988 have shown, for example, that nondisabled beneficiaries accounted for more than 80 percent of hospital admissions for asthma (Mayer-Oakes, et al., 1994).

Table 1
Medicaid program characteristics in the three study States[1]

	California		Georgia		Michigan	
Number (%) of Medicaid enrollees						
Total enrollees	6,060,000	(100.0)	967,000	(100.0)	1,361,000	(100.0)
Nondisabled enrollees	5,340,000	(88.1)	814,000	(84.2)	1,178,000	(86.6)
Children under 21	3,065,000	(50.6)	493,000	(50.9)	720,000	(52.9)
Adults age 21 to 64	1,724,000	(28.4)	219,000	(22.6)	367,000	(27.0)
Aged enrollees (>65)	551,000	(9.1)	102,000	(10.5)	91,000	(6.7)
Disabled enrollees	720,000	(11.9)	153,000	(15.8)	183,000	(13.4)
Expenditures						
Total fiscal year 1991 Medicaid payments	$8,999,39[illegible],000		$2,034,034,000		$3,469,891,000	
Average payments per beneficiary (1991)						
Total nondisabled enrollees	$1,886		$2,411		$2,283	
Children	834		1,147		927	
Adults age 21-64	2,695		3,273		3,173	
Aged enrollees (>65)	3,593		4,843		6,577	
Eligibility criteria						
Poverty level coverage for women and infants	185% of poverty		133% of poverty		185% of poverty	
AFDC income threshold for family of three	$1,161 within first four months of eligibility		$756 within first four months of eligibility		$809 within first four months of eligibility	
Streamlining State eligibility for pregnant women						
Dropped assets test	no		yes		yes	
Shortened application	no		yes		yes	
Outstationing eligibility workers	yes		yes		yes	
Utilization review policies						
Surgical preauthorization	yes		yes		yes	
Co-payment policies (effective January 1991)	Drugs, ER use, outpatient, hospital		None		Drugs, miscellaneous services	
Managed Care enrollment						
Types of Medicaid managed care programs (1990 data)	HMOs, partial capitation, health insurance organizations		None		HMOs, case management	
Number (%) of enrollees	357,504 (6)		Not applicable		128,697 (9)	

[1] This table describes program information for January 1992, except as otherwise indicated.

SOURCE: Congressional Research Service, 1993; Kaiser Commission on the Future of Medicaid, 1995.

Prepared by: Research and Policy Division, The MEDSTAT Group.

All three States met or exceeded federal guidelines with expanded Medicaid eligibility for children and pregnant women. California and Michigan exceeded federal guidelines, with optional eligibility criteria at 185 percent of the federal poverty level, whereas Georgia had mandatory coverage at 133 percent of the federal poverty level.

The three States sought alternative methods of providing better access to pediatric care. Georgia, for example, added early-intervention targeted case management as a covered service for children from birth to three years of age and expanded the perinatal case management program to all its counties. Michigan added a special developmental test to the basic early periodic screening diagnostic testing (EPSDT) services under Medicaid. California changed financial eligibility determinations for medical services for handicapped children whose families were unable to pay for their care, expanding services to women, newborns and other children through its Comprehensive Perinatal Services Program (CPSP).

To expedite the enrollment of pregnant women in Medicaid, the States modified certain eligibility criteria. Michigan and Georgia dropped the assets test, using only income to decide eligibility. Both States shortened the application process. All three States provided outreach services, stationing eligibility workers in neighborhoods with many eligible women. In addition, they tried to improve prenatal care in special ways: Georgia doctors, for example, received a $100 incentive payment for starting prenatal care in the first trimester of pregnancy; the State also offered additional payments to hospitals providing birthing classes; Michigan increased reimbursements for some types of deliveries and provided additional coverage for certain tests and drugs.

California paid special attention to its prenatal and obstetrical programs. To reduce the low birth weight rate, the State developed the Comprehensive Perinatal Services Program (CPSP), providing a broader range of comprehensive support services to low-income pregnant and postpartum women from conception until 60 days postpartum. California increased the length of allowable stay for patients who had c-sections, increased reimbursement to obstetricians, and provided bonuses to approved CPSP providers for providing early and continuous care.

Selection of the Medical Conditions Studied

The study targeted three specific medical conditions—pediatric asthma, hysterectomy, and complicated delivery—so that medical treatments could be studied in depth and compared to expert recommendations (an approach not possible when a broad cross-section of conditions is studied). These three conditions, important to women and children in the Medicaid population, included a common pediatric condition (pediatric asthma), a common surgical procedure significant in women's health (hysterectomy), and a condition meaningful in maternal and child health (complicated delivery).

We chose these conditions primarily based on results of Phase I of the Quality of Care: Medicaid and Other Populations Study. Among the most important findings of that study that influenced selection of the three conditions were:

- Asthma was the most frequent reason for hospital admission of Medicaid children, with a rate substantially higher than that for nonMedicaid children; Medicaid hospitalization rates for this condition varied widely among geographic areas, suggesting large variations in approaches to treatment.

- Hysterectomy and cholecystectomy consistently were among the highest volume inpatient surgeries in the Medicaid population, with hysterectomy rates varying widely among geographic areas.

- Pregnancy-related conditions were by far the major source of inpatient admissions in the Medicaid population under age 65. A higher rate of postpartum complications was noted for Medicaid compared to nonMedicaid cases.

Defining and Measuring Quality of Care

In this study, we examined several dimensions of "quality of care." By quality of care we mean "the degree to which health services for individuals and populations increase the likelihood of desired outcomes and are consistent with current professional knowledge" (Institute of Medicine, 1990). Table 2 describes each of the quality of care dimensions of primary interest.

Table 2

Primary quality of care dimensions addressed by this report and corresponding study indicators

Quality of care dimensions	Corresponding study indicators
Appropriateness	Appropriateness of hospitalization for children with asthma; appropriateness of hysterectomy; appropriateness of c-section and vaginal delivery;
Process of care	Comparison of actual care to external standards regarding essential aspects of diagnosis and treatment
Effectiveness	Outcomes of care

Appropriateness is related to the type of care that best medical judgment would prescribe (Jencks and Benedict, 1990). Appropriate care becomes an issue only after a patient gains access to care. We studied this aspect of quality of care by looking in detail at specific clinical circumstances — hospitalization of pediatric asthma patients, vaginal delivery vs. c-section for complicated delivery patients, and hysterectomy. We then gauged their appropriateness according to standards set by national panels of expert physicians.

Process of care addresses whether the care rendered meets current standards. To measure this dimension of quality of care, process of care criteria were created by the physician panels, representing what they believed to be care that is necessary to prevent adverse clinical outcomes. In creating the criteria, the panels were asked to focus on what they believe to be essential care. The criteria address such topics as types of medications given, pre- and postoperative care, inhospital monitoring, management of complications, and discharge stability.

Effectiveness is evaluated by measuring whether health care accomplishes the desired result. In this study, we used Outcomes of Care as our indicator of effectiveness. Our measures of treatment outcomes—both during the hospital stay and at discharge—included rates of treatment complications and of other events generally related to quality of care.

In addition, two secondary dimensions of quality were also studied. **Severity of illness at the time of hospital admission** provides information potentially reflecting access to care, patient care-seeking behavior, and patient health habits. Study of **intensity of care** provides information regarding whether sicker patients receive more services and allows for study of how it influences treatment outcomes.

Selecting Hospitals and Patients. About 9600 medical records were obtained from some 118 hospitals located throughout California, Georgia, and Michigan, and included patients hospitalized for pediatric asthma, hysterectomy, and complicated delivery. Although the complicated delivery analysis focused primarily on the quality of care rendered to the mother during labor and delivery, newborn (as well as maternal) records were also abstracted, recognizing that neonatal outcomes also reflect the quality of labor and delivery care. Medicaid patients of all eligibility groups were eligible for study, and the Medicaid sample included patients treated in traditional fee-for-service arrangements as well as in managed care settings (only the California and Michigan Medicaid programs included managed care providers).

Medical records were sampled using a two-stage sampling procedure. At the first stage, 118 urban hospitals were sampled across the three States: California, Michigan, and Georgia. We selected two urban hospital samples: one for the women's conditions (hysterectomies and complicated deliveries) and another for the children's condition (inpatient pediatric asthma).

We drew each hospital sample from the list of hospitals in the 1991 American Hospital Association survey. Within each State, hospitals were classified into three groups according to the percent of their total discharges that were Medicaid during 1991. Within each group, hospitals were sorted on an estimate of the number of study cases that they treated in 1991. From this sorted list of hospitals, we pulled a systematic sample with probabilities proportional to the number of study cases each hospital treated. This helped to assure representativeness on hospital Medicaid caseload and study condition caseload.

At the second stage, a sample of discharges was drawn from each sampled hospital's discharge files for 1991. Within each State and for each of the study's medical conditions, total samples of approximately 400 Medicaid and 400 privately insured discharges were drawn from the sample of urban hospitals. Equal sample sizes were drawn for each State and payment method to ensure approximately equal precision in the estimates for each State and payment method. A simple random sample of 400 cases is sufficient to estimate a given target percentage, such as the percentage of cases that received poor quality care, within 5 percentage points with 95 percent confidence. The precision was expected to be only slightly lower for estimates from the two-stage sample used in this study because of possible correlations among discharges within hospitals (Houchens, 1994).

Statistical Methods. For each of the analyses, we compared the results for the Medicaid and privately insured groups in each State, calculated means and standard deviations where appropriate, and tested to see if observed differences between the Medicaid and privately insured samples were statistically significant. The Figures in Part II (Major Findings) summarize many of these descriptive results. We also performed more complex (multivariate) analyses to control for important differences between the Medicaid and privately insured groups in each State that might influence the results.

We considered a number of patient- and hospital-level risk factors as potential independent variables to explain variations in quality and to address the study's research questions. These independent variables were used in both the descriptive and multivariate analyses to control for factors that were known or believed to influence quality of care. This, in turn, enabled us to generate statistically valid estimates of the independent effects of Medicaid status on quality of care.

To control for potential differences in the two patient samples, we included age as an independent variable in most of our analyses and sex as an independent variable in the pediatric asthma and neonatal outcomes analyses. We included race as an independent variable, because numerous studies have shown in recent years that race is associated with variation in outcomes of care, process of care, and appropriateness of surgical procedures.

It is important to note that, while the variables mentioned above, along with payer and State, represented the core independent patient-level variables, several analyses required other patient-level variables that either came from the medical records data set or were constructed using data items contained in the data set. For example, we included variables to control for underlying differences in severity of illness (e.g., mild, moderate, or severe episode of asthma) and presence of coexisting diseases (e.g., diabetes and other diseases known to influence outcomes for the three conditions that were studied) in our outcomes and process of care models.

PART II. MAJOR FINDINGS

1. How do the samples of Medicaid and privately insured patients compare in terms of the patients represented and the hospitals where they receive care?

Medicaid and privately insured cases varied in important ways in all three study States and for all of the medical conditions studied. In general, the Medicaid groups included greater numbers of black and Hispanic patients, and the hospitals treating them were more likely to be public institutions with high percentages of Medicaid patients. The results for each medical condition are summarized below.

Pediatric Asthma: This group of patients—children hospitalized for asthma by hospitals in urban areas—included samples of about 400 Medicaid and 400 privately insured patients in each of the three study States. Children aged two to 17 were randomly sampled at the selected hospitals; children younger than two were excluded because asthma is relatively rare at that age and easily confused with other common illnesses, such as croup. Only patients whose principal reason for admission was asthma were sampled.

Table 3 shows nearly identical age distributions of the Medicaid and privately insured children studied in California, with children aged two to five comprising the majority of cases. The majority of Medicaid cases in Georgia and Michigan were also two to five years of age, but included greater percentages of young patients than the privately insured groups. The majority of cases in all three States involved male patients (65.4% for Medicaid and 62.6% for privately insured in California; 61.8% and 62.7% in Georgia; and 58.0% and 58.6% in Michigan)

Comparisons of race and ethnicity generally show greater percentages of minority patients in the Medicaid groups. The majority of Medicaid patients in California were either black or Hispanic, 73 percent compared to 48 percent of the privately insured. In Georgia, 78 percent, and in Michigan, 57 percent of hospitalized Medicaid patients studied were black compared to 28 percent and 23 percent of the privately insured.

We sampled hospitals to ensure a representative number of cases from each State's urban population. Table 3 compares the resulting Medicaid and privately insured samples by hospital type and shows that, in general, a higher percentage of the Medicaid patients in all three States were treated at public hospitals and at hospitals with a high "share"—or proportion—of Medicaid patients (particularly in California).

Other hospital characteristics varied. Although greater percentages of Medicaid than privately insured patients in California and Georgia were treated at teaching hospitals with higher staffing ratios (the number of staff employed per bed), for example, the opposite was true in Michigan.

Hysterectomy: This group of patients—also treated at hospitals in urban areas—includes samples of approximately 400 Medicaid and 400 privately insured patients in each of the three study States. Women undergoing hysterectomy were randomly sampled from the hospitals selected. Women undergoing outpatient hysterectomy were excluded from the samples.

Table 3. Number (and percent) of hospitalizations in the pediatric asthma cohort, by demographic and hospital characteristics, payer, and State, 1991

	Medicaid			Privately-insured		
	California	Georgia	Michigan	California	Georgia	Michigan
Age group						
2-5	211(53.3)	205(54.8)	225(53.7)	205(52.2)	148(40.9)	185(41.4)
6-12	131(33.1)	125(33.4)	127(30.3)	122(31.0)	160(44.2)	173(38.7)
13-17	54(13.6)	44(11.8)	67(16.0)	66(16.8)	54(14.9)	89(19.9)
Race						
White	72(18.2)	75(20.1)	152(36.3)	146(37.2)	218(60.2)	299(66.9)
Black	162(40.9)	291(77.8)	238(56.8)	112(28.5)	130(35.9)	104(23.3)
Hispanic	133(33.6)	2(0.5)	6(1.4)	75(19.1)	1(0.3)	4(0.9)
Other	19(4.8)	3(0.8)	1(0.2)	32(8.1)	4(1.1)	2(0.5)
No data	10(2.5)	3(0.8)	22(5.3)	28(7.1)	9(2.5)	38(8.5)
Hospital bedsize						
<100	3(0.8)	2(0.5)		11(2.8)	4(1.1)	10(2.2)
100-249	201(50.8)	28(7.5)	52(12.4)	152(38.7)	97(26.8)	68(15.2)
250-400	127(32.1)	125(33.4)	186(44.4)	181(46.1)	143(39.5)	109(24.4)
401-650	65(16.4)	128(34.2)	173(41.3)	49(12.5)	94(26.0)	243(54.4)
>650	0(0)	91(24.3)	8(1.9)	0(0)	24(6.6)	17(3.8)
Teaching status						
Major	136(34.3)	139(37.2)	164(39.1)	42(10.7)	42(11.6)	244(54.6)
Minor	62(15.7)	41(11.0)	52(12.4)	133(33.8)	23(6.4)	52(11.6)
None	198(50.0)	194(51.9)	203(48.5)	218(55.5)	297(82.0)	151(33.8)
Ownership						
Public	107(27.0)	218(58.3)	48(11.5)	25(6.4)	145(40.1)	30(6.7)
Private	289(73.0)	156(41.7)	371(88.5)	368(93.6)	217(59.9)	417(93.3)
Medicaid share[1]						
Low	19(4.8)	20(5.4)	22(5.3)	193(49.1)	24(6.6)	142(31.8)
Medium	96(24.2)	134(35.8)	169(40.3)	97(24.7)	162(44.8)	107(23.9)
High	281(71.0)	220(58.8)	228(54.4)	103(26.2)	176(48.6)	198(44.3)
Staffing ratio[2]						
Low	0(0)	2(0.5)	13(3.1)	0(0)	11(3.0)	45(10.1)
Medium	68(17.2)	110(29.4)	130(31.0)	185(47.1)	116(32.0)	45(10.1)
High	328(82.8)	262(70.1)	276(65.9)	208(52.9)	235(64.9)	357(79.9)
Total hospitalizations[3]	396(100.0)	374(100.0)	415(100.0)	393(100.0)	362(100.0)	447(100.0)

[1] The percentage of cases treated by a hospital that were covered by Medicaid. Categories identify whether hospitalization occurred at a hospital falling in the lowest, mid, or highest third of all hospitals in the three study States based on Medicaid share.

[2] The ratio of full time equivalent staff employed by a hospital relative to its bedsize. Categories identify whether hospitalization occurred at a hospital falling in the lowest, mid, or highest third of hospitals in the three study States based on this ratio.

[3] Total reflects frequencies, not person counts.

SOURCE: 1991 medical records data, the Quality of Care: Medicaid and Other Populations Study, Contract number: HCFA 500-94-0017; American Hospital Association Annual Survey of Hospitals, 1991.

Table 4 shows that women in the Medicaid groups for all three States tended to be somewhat younger compared to the private pay groups and, as with Pediatric Asthma, a higher percentage of the Medicaid patients were treated at public hospitals and at hospitals with high Medicaid shares. Greater percentages of Medicaid patients in California and Georgia were treated at teaching hospitals with higher staffing ratios, while the opposite was true in Michigan.

Complicated Delivery: Our study of complicated deliveries included approximately 400 Medicaid and 400 privately insured patients delivering at urban hospitals (we excluded patients transferred to those hospitals in the three study States). According to Table 5, demographic and hospital trends resemble those described for pediatric asthma and hysterectomy.

The Medicaid patients tended to be younger than the privately insured patients, and greater percentages of them were nonwhite. Greater numbers of Medicaid women with complicated deliveries were treated at public hospitals and, as expected, at hospitals that treat the highest shares of Medicaid patients. Although more Medicaid patients in the California and Georgia samples were treated at teaching hospitals, the opposite was true in Michigan.

Medicaid women with complicated deliveries were more likely to deliver vaginally (43 to 49 percent) than were private pay patients (33 to 38 percent). The type of pregnancy complications qualifying a patient for inclusion in the study were fairly comparable in all three States for Medicaid and private pay patients: prior c-section, problems relating to prolonged labor, fetal distress, pregnancy-induced hypertension, and abnormal lay of the fetus accounted for the vast majority of cases.

2. How does the quality of hospital care provided to Medicaid and privately insured patients compare?

—In terms of appropriateness?

We compared Medicaid and privately insured patients on overall appropriateness of hospitalizations for asthma or hysterectomies and, in the case of complicated deliveries, on the appropriateness of the choice between vaginal delivery and c-section.

For pediatric asthma, the expert panelists agreed upon a list of criteria against which to judge appropriateness of hospitalization. The criteria generally concluded that a hospitalization was inappropriate only if a patient had no or mild symptoms of asthma and no other exacerbating conditions. Concerns regarding adequacy of home care were also taken into consideration. This approach, which was methodologically simpler than the approach used to study appropriateness of hysterectomy and complicated delivery, simply identified cases for which there was no justifiable reason for admission documented in the medical record and grouped them into a single category of "inappropriate admissions."

Table 4. Number (and percent) of hospitalizations in the hysterectomy cohort, by demographic and hospital characteristics, payer, and State, 1991[1]

	Medicaid			Privately-insured		
	California	Georgia	Michigan	California	Georgia	Michigan
Age group						
14-29	43(10.9)	83(21.8)	84(20.5)	5(1.2)	24(5.7)	14(3.5)
30-44	258(65.1)	245(64.5)	258(63.1)	244(58.8)	266(62.8)	230(57.4)
45-64	95(24.0)	52(13.7)	67(16.4)	166(40.0)	134(31.6)	157(39.1)
Race						
White	137(34.6)	119(31.3)	273(66.7)	280(67.5)	299(70.5)	340(84.8)
Black	56(14.1)	258(67.9)	124(30.3)	23(5.5)	118(27.8)	37(9.2)
Hispanic	144(36.4)	2(0.5)	7(1.7)	52(12.5)	2(0.5)	2(0.5)
Other	43(10.9)	0(0)	2(0.4)	29(7.1)	3(0.7)	2(0.5)
No data	16(4.0)	1(0.3)	3(0.7)	31(7.5)	2(0.5)	20(5.0)
Hospital bedsize						
<100	36(9.1)	0(0)	1(0.2)	13(3.1)	0(0)	29(7.2)
100-249	112(28.3)	23(6.1)	65(15.9)	188(45.3)	87(20.5)	86(21.5)
250-400	181(45.7)	66(17.4)	194(47.4)	179(43.1)	168(39.6)	142(35.4)
401-650	21(5.3)	200(52.6)	112(27.4)	22(5.3)	152(35.9)	108(26.9)
>650	46(11.6)	91(23.9)	37(9.1)	13(3.1)	17(4.0)	36(9.0)
Teaching status						
Major	38(9.6)	97(25.5)	117(28.6)	10(2.2)	49(11.6)	124(30.9)
Minor	136(34.3)	72(18.9)	52(12.7)	108(26.0)	31(7.3)	46(11.5)
None	222(56.1)	211(55.5)	240(58.7)	306(73.7)	344(81.1)	231(57.6)
Ownership						
Public	179(45.2)	167(43.9)	53(13.0)	41(9.9)	87(20.5)	44(11.0)
Private	217(54.8)	213(56.1)	356(87.0)	374(90.1)	337(79.5)	357(89.0)
Medicaid share[1]						
Low	6(1.5)	25(6.6)	12(2.9)	164(39.5)	133(31.4)	127(31.7)
Medium	48(12.1)	113(29.7)	108(26.4)	143(34.5)	220(51.9)	166(41.4)
High	342(86.4)	242(63.7)	289(70.7)	108(26.0)	71(16.7)	108(26.9)
Staffing ratio[2]						
Low	29(7.3)	0(0)	0(0)	4(1.0)	0(0)	0(0)
Medium	53(13.4)	93(24.5)	128(31.3)	164(39.5)	182(42.9)	48(12.0)
High	314(79.3)	287(75.5)	281(68.7)	247(59.5)	242(57.1)	353(88.0)
Total hospitalizations[3]	396(100.0)	380(100.0)	409(100.0)	415(100.0)	424(100.0)	401(100.0)

[1] The percentage of cases treated by a hospital that were covered by Medicaid. Categories identify whether hospitalization occurred at a hospital falling in the lowest, mid, or highest third of all hospitals in the three study States based on Medicaid share.

[2] The ratio of full time equivalent staff employed by a hospital relative to its bedsize. Categories identify whether hospitalization occurred at a hospital falling in the lowest, mid, or highest third of hospitals in the three study States based on this ratio.

[3] Total reflects frequencies, not person counts.

SOURCE. 1991 medical records data, the Quality of Care: Medicaid and Other Populations Study, Contract number: HCFA 500-94-0017; American Hospital Association Annual Survey of Hospitals, 1991.

Table 5. Number (and percent) of hospitalizations in the urban complicated delivery-mother cohort, by demographic and hospital characteristics, payer, and State, 1991

	Medicaid			Privately-insured		
	California	Georgia	Michigan	California	Georgia	Michigan
Mother's age						
<20	68(16.5)	104(25.7)	84(19.8)	16(4.3)	10(2.6)	24(6.4)
20-29	241(58.6)	232(57.1)	271(63.9)	158(43.1)	196(51.7)	215(55.0)
30-39	89(21.7)	70(17.3)	65(15.3)	177(48.2)	167(44.1)	147(37.6)
≥40	13(3.2)	0(0.0)	4(0.9)	16(4.4)	6(1.6)	5(1.3)
Race						
White	118(28.7)	143(35.2)	238(56.1)	219(59.7)	271(71.5)	337(86.2)
Black	33(8.0)	247(60.8)	167(39.4)	24(6.5)	95(25.1)	41(10.5)
Hispanic	227(55.2)	7(1.7)	12(2.8)	74(20.2)	0(0.0)	5(1.3)
Other	33(8.0)	9(2.3)	5(1.1)	46(12.5)	13(3.5)	5(1.4)
No data	0(0.0)	0(0.0)	2(0.5)	4(1.1)	0(0.0)	3(0.8)
Hospital bedsize						
<100	45(10.9)	0(0.0)	41(9.7)	8(2.2)	0(0.0)	36(9.2)
100-249	161(39.2)	82(20.2)	65(15.3)	167(45.5)	40(10.6)	54(13.8)
250-400	145(35.3)	114(28.1)	163(38.4)	151(41.1)	129(34.0)	127(32.5)
401-650	25(6.1)	172(42.4)	134(31.6)	26(7.1)	191(50.4)	122(31.2)
>650	35(8.5)	38(9.4)	21(5.0)	15(4.1)	19(5.0)	52(13.3)
Teaching status						
Major	52(12.7)	67(16.5)	108(25.5)	1(0.3)	46(12.1)	156(39.9)
Minor	118(28.7)	85(20.9)	81(19.1)	106(28.9)	34(9.0)	38(9.7)
None	241(58.6)	254(62.6)	235(55.4)	260(70.8)	299(78.9)	197(50.4)
Ownership						
Public	186(45.3)	157(38.7)	59(13.9)	23(6.3)	102(26.9)	34(8.7)
Private	225(54.7)	249(61.3)	365(86.1)	344(93.7)	277(73.1)	357(91.3)
Medicaid share[1]						
Low	11(2.7)	33(8.1)	17(4.0)	144(39.2)	115(30.3)	84(21.5)
Medium	73(17.8)	240(59.1)	140(33.0)	130(35.4)	195(51.5)	179(45.8)
High	327(79.6)	133(32.8)	267(63.0)	93(25.3)	69(18.2)	128(32.7)
Staffing ratio[2]						
Low	23(5.6)	0(0.0)	0(0.0)	3(0.8)	0(0.0)	0(0.0)
Medium	96(23.4)	131(32.3)	95(22.4)	164(44.7)	113(29.8)	44(11.2)
High	292(71.0)	275(67.7)	329(77.6)	200(54.5)	266(70.2)	347(88.8)
Total hospitalizations[3]	411(100.0)	406(100.0)	424(100.0	367(100.0)	379(100.0)	391(100.0)

[1] The percentage of cases treated by a hospital that were covered by Medicaid. Categories identify whether hospitalization occurred at a hospital falling in the lowest, mid, or highest third of all hospitals in the three study States based on Medicaid share.
[2] The ratio of full time equivalent staff employed by a hospital relative to its bedsize. Categories identify whether hospitalization occurred at a hospital falling in the lowest, mid, or highest third of hospitals in the three study States based on this ratio.
[3] Total reflects frequencies, not person counts.
SOURCE: 1991 medical records data, the ...lity of Care: Medicaid and Other Populations Study, Contract number: HCFA 500-94-0017.; American Hospital Association Annual Survey of Hospitals, 1991.

For hysterectomy, the seven expert panelists rated the appropriateness of hysterectomy on a nine point scale (1 = completely appropriate and 9 = completely inappropriate) for each of more than 200 potential clinical conditions for which hysterectomies might be performed. Using these ratings, we classified each condition as *appropriate* (ratings from 1 to 3), *equivocal* (ratings from 4 to 6), or *inappropriate* (ratings from 7 to 9).

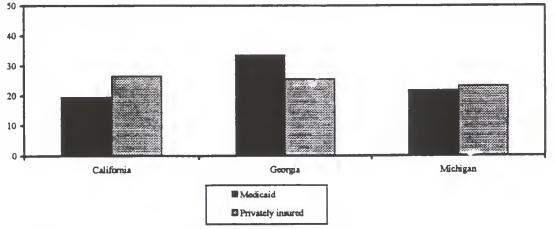
Using a similar process, we arrived at a judgment as to the appropriateness of decisions to deliver babies vaginally or by c-section. Again, the decision was classified as appropriate, equivocal, or inappropriate, and we compared the rate of inappropriate deliveries between Medicaid and private pay patients.

Pediatric Asthma: Just four cases were found to have been inappropriately admitted to the hospital: one Medicaid patient in Georgia and one patient in each of the three privately insured groups. In these four instances, the patients had very mild symptoms of asthma, and there was no other reason found in the medical chart for which admission was felt to be necessary.

Hysterectomy: The bar graph in Figure 1 compares the unadjusted percentages of inappropriate hysterectomies for Medicaid and privately insured patients. The graph shows that hysterectomy was judged inappropriate in California for 20 percent of Medicaid and for 27 percent of privately insured patients ($p<.05$); in Georgia, for 36 percent and 26 percent of Medicaid and privately insured patients ($p<.01$); and in Michigan, for 23 percent and 24 percent of Medicaid and privately insured patients (not statistically significant, $p>.05$).

Figure 1

Percent of hysterectomies performed for inappropriate reasons: Medicaid and privately insured, 1991



Source: 1991 medical records data, the Quality of Care: Medicaid and Other Populations Study, Contract number: HCFA 500-94-0017.

Prepared by: Research and Policy Division, The MEDSTAT Group

We adjusted for underlying differences between Medicaid and privately insured patients such as age, race, and severity, and found that the odds for an inappropriate hysterectomy were about 46 percent lower for Medicaid patients in California, but were not significantly different for Medicaid patients in Georgia and Michigan.

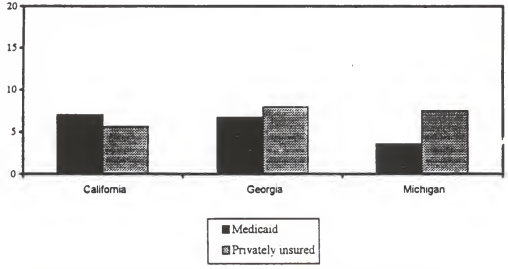
The odds of an inappropriate hysterectomy were higher for blacks in all three States, regardless of payer. The odds for blacks were two to three times that for other races, irrespective of their insurance status.

Complicated Delivery: The bar graph in Figure 2 shows the overall rate of inappropriate decision-making to be relatively modest, ranging from a low of 3.6 percent for Medicaid patients in Michigan to a high of 7.9 percent for private pay patients in Georgia.

Pooling data for analysis purposes and controlling for underlying differences between the two groups, Michigan Medicaid patients had only about 45 percent the odds of other patients across the three States of an inappropriate delivery mode.

Figure 2

Percent of inappropriate delivery decisions: Medicaid and privately insured, 1991



Source: 1991 medical records data, the Quality of Care: Medicaid and Other Populations Study. Contract number: HCFA 500-94-0017.

Prepared by: Research and Policy Division, The MEDSTAT Group

—In terms of process of care?

Whether or not medical care adheres to process standards or guidelines is a critical part of quality care. National panels of expert physicians derived standards for the process of care study, specifying what sort of care they deemed essential treatment. Criteria addressed many aspects of the hospital stay including patient monitoring and treatment, management of complications, and preparation for discharge. The panels avoided criteria that might reflect reasonable variations in physician practice patterns, or that might not be found in hospital records.

Recognizing that not complying with some of the broad range of criteria suggests more serious consequences than not complying with others, we divided them into three criteria categories:

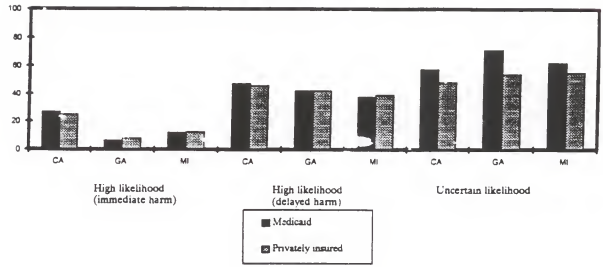
- *Criteria with High Likelihood of Immediate Harm* — These are criteria which, if not complied with, are likely to result in harm to the patient within 24 hours; an example for pediatric asthma is: Patients with acute respiratory failure should be admitted to an intensive care unit (or its equivalent).
- *Criteria with High Likelihood of Delayed Harm* — These are criteria which, if not complied with, are likely to result in harm to the patient more than 24 hours later; an example for hysterectomy is: There should be no temperature greater than 100.4 in the 12 hours preceding discharge.
- *Criteria with an Uncertain Likelihood of Harm* — These are criteria which, if not complied with, are either unlikely to cause harm to a patient or whose impact is uncertain. An example for complicated delivery is: Record of prenatal care, if any, should be available on the medical record. Although not complying with these criteria is apt to have an adverse effect in a smaller percentage of cases than is true for the other groups, the adverse consequences have the potential to be just as serious. Thus, these criteria are also of significant clinical importance.

In analyzing results for each category, we studied the number and percent of cases involving nonadherence to one or more of the category's criteria.

Pediatric Asthma. Figure 3 shows no differences between Medicaid and privately insured patients in any of the three States with respect to not complying with criteria with either *high likelihood of immediate harm* or *high likelihood of delayed harm*. These are the two groups of criteria of greatest potential impact on patients and their treatment outcomes.

Figure 3

Percent of pediatric asthma cases not complying with process of care criteria, by likelihood of serious harm: Medicaid and privately insured, 1991



Source: 1991 medical records data, the Quality of Care: Medicaid and Other Populations Study, Contract number: HCFA 500-94-0017.

Prepared by: Research and Policy Division, The MEDSTAT Group

However, somewhat more Medicaid cases in all three study States did not comply with at least one criterion that had an *uncertain likelihood of causing harm* (58% and 49% in California, $p<.05$; 72% and 54% in Georgia, $p<.01$; 62% and 56% in Michigan, $p<.05$). Compared to the privately insured, Georgia Medicaid admissions had a 142 percent higher odds of not complying with at least one criterion with uncertain likelihood of causing harm when the rates shown in Figure 3 were adjusted for important underlying differences between the two groups; findings for patients in the other two States showed that California and Michigan Medicaid admissions had a 50 percent higher odds of not complying with at least one criterion compared to privately insured patients in those States.

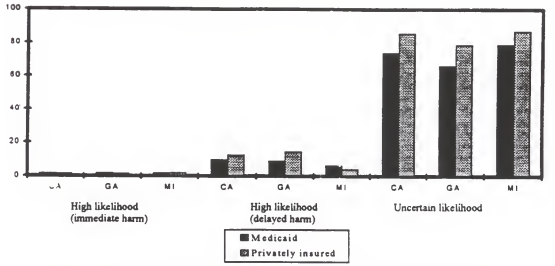
Analyzing the 25 individual process of care criteria that comprised the three categories previously described, Medicaid cases in all three States were more likely than private pay cases to be discharged on suboptimal types or classes of medications (38% for Medicaid and 25% for private pay patients in California, $p<.01$; 33% and 26% in Georgia, $p<.05$; 41% and 34% in Michigan; $p<.05$).

Somewhat more Medicaid asthmatic children lacked a regular source of care than did the privately insured (10% and 6% in California, $p < .05$; 18% and 10% in Georgia, $p < .01$; 8% and 2% in Michigan, $p < .01$). In California, Medicaid cases were more likely not to comply with the criterion requiring a followup visit to be planned within one week for patients with moderate or severe asthma (22% compared to 13%, $p < .01$). In contrast, privately insured patients in California were less likely not to comply with the criterion assuring that antibiotics be provided only in appropriate circumstances (5% vs. 9%, $p < .05$).

Hysterectomy: Figure 4 shows that there were very few cases that did not comply with the process of care criteria that had a *high likelihood of leading to immediate harm*, and no differences were found between Medicaid and privately insured women.

Figure 4

Percent of hysterectomies not complying with process of care criteria, by likelihood of serious harm: Medicaid and privately insured, 1991



Source: 1991 medical records data, the Quality of Care: Medicaid and Other Populations Study. Contract number: HCFA 500-94-0017.

Prepared by: Research and Policy Division, The MEDSTAT Group

Less Medicaid than privately insured patients in Georgia did not comply with at least one criterion with a *high likelihood of delayed harm* (9% compared to 14%, $p < .05$). Care of Medicaid patients better adhered to the criterion that an abdominal surgical incision be checked prior to discharge (just 7% noncompliance compared to 14%, $p < .01$); this criterion accounted for the majority of *high likelihood of delayed* harm noncompliances. However, differences in overall

percentages of Medicaid and private pay patients whose care did not adhere to criteria were no longer statistically significant when demographic and severity differences were adjusted for

In contrast to the results for pediatric asthma, Medicaid hysterectomy patients in all three States were more likely than their privately insured counterparts to comply with criteria with an *uncertain likelihood of causing serious harm* (Figure 4). Across all three States, Medicaid patients had significantly lower odds than private pay patients of not complying with one or more criteria, controlling for important risk factors such as illness severity, age, and other sociodemographic characteristics.

Looking at results for the 28 individual criteria (comprising the three criteria categories), Medicaid hysterectomy patients were less likely:

- in California, to be gotten out of bed on the first postoperative day to prevent pulmonary embolism and other complications (5.3% criterion noncompliance rate compared to 1.2%, $p<.01$);
- in Georgia, to receive a preoperative electrocardiogram if age or medical conditions warranted it (21% criterion noncompliance rate compared to 10%, $p<.05$);
- and in Michigan, to have their blood counts checked postoperatively to detect possible hemorrhage (20% criterion noncompliance rate compared to 10%, $p< 01$).

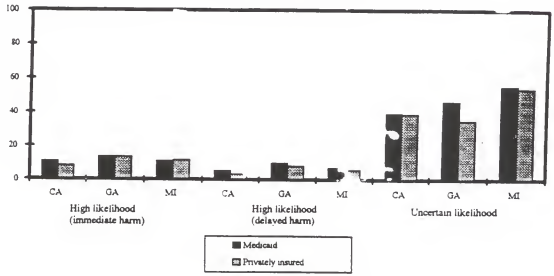
Privately insured hysterectomy patients, on the other hand:

- in all three States were less likely to comply with criteria calling for daily chest and abdominal exams (chest exam criterion noncompliance rate ranged from 66% to 72% for private pay patients, and 39% to 56% for Medicaid patients; for abdominal exam, the respective ranges were 26% to 39%, and 15% to 29%);
- in Georgia and Michigan, had fewer preoperative checks of serum potassium (18% criterion noncompliance rate compared to 13% in Georgia, $p<.05$; 44% compared to 25% in Michigan, $p<.01$);
- in California, had fewer preoperative blood samples sent to the blood bank for routine type and cross-match in case of need for perioperative blood transfusion (22% criterion noncompliance rate compared to 16%, $p<.05$).

Complicated Delivery. Figure 5 shows no significant payer differences for any of the three process of care categories in any of the three States. While, in Georgia, Medicaid patients were significantly more likely than their privately insured counterparts to have at least one process of care noncompliance for the *uncertain effect* category, the estimated odds of at least one such noncompliance were not significantly different from that of their private pay counterparts when controlling for important risk factors.

Figure 5

Percent of deliveries not complying with process of care criteria, by likelihood of serious harm: Medicaid and privately insured, 1991



Source: 1991 medical records data, the Quality of Care: Medicaid and Other Populations Study. Contract number: HCFA 500-94-0017.

Prepared by: Research and Policy Division, The MEDSTAT Group

On taking a closer look at results for the 28 individual criteria, we found that Medicaid patients were more likely:

- in Georgia and Michigan, not to comply with the criterion requiring the prenatal care record be part of the hospital chart (21% compared to 7% in Georgia, $p<.01$; 24% compared to 16% in Michigan, $p<.01$);
- in Georgia, not to comply with the criterion requiring that patients with dysfunctional labor coupled with inadequate uterine contractions receive oxytocin to augment labor, except where specifically contraindicated (4.6% compared to 0%, $p<.05$);
- in California, not to comply with the criterion calling for assuring, before proceeding with an elective delivery, the sufficient maturity of a fetus' lungs (12% compared to 4%, $p<.01$).

Privately insured complicated delivery patients, on the other hand:

- In California, were more likely not to receive daily postpartum examinations (8% compared to 4%, $p<.05$);

- in Michigan, were more likely not to have their blood count checked following delivery (14% compared to 5%, $p<.01$).

—In terms of outcomes of care, or effectiveness of the care rendered?

Two types of outcomes were studied:

- *Those best reflecting the effectiveness of treatment rendered during the hospital stay*: These outcomes were those of principal interest to the Study. We determined whether there were meaningful differences between Medicaid and privately insured patients using both simple statistical methods and more complex regression techniques to adjust for underlying differences between the two groups. These outcomes primarily included treatment complications and discharge severity. There were not a sufficient number of deaths for any of the conditions to allow for meaningful comparisons between Medicaid and privately insured patients;

- *Other outcomes of general interest*: This group was composed principally of quality assurance screening measures and outcomes that are often correlated with but that do not necessarily reflect quality of care. For example, "removal of a fibroid uterus weighing less than 280 grams" often, but not always, indicates an inappropriate hysterectomy (ACOG, 1989). Comparisons of Medicaid and privately insured patients as to occurrence of these outcomes were made using descriptive statistical techniques.

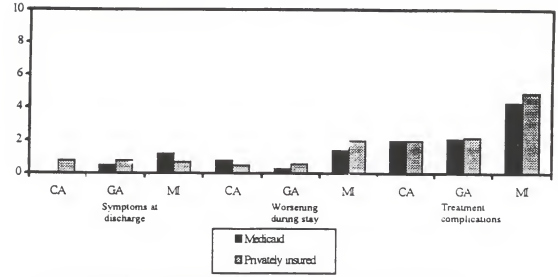
Pediatric Asthma: We studied four "outcomes of special interest" that were judged by expert clinical panels to best reflect the effectiveness of the treatment:

- severity of asthma at the time of hospital discharge,
- development of complications suggesting worsening after admission;
- occurrence of complications of treatment during the hospital stay; and
- death during hospitalization.

The bar graph in Figure 6 shows very little variation in the first two outcomes. Both Medicaid and privately insured patients had either no or mild *symptoms at the time of discharge*, suggesting effective hospital treatment, and few cases *worsened* following hospital admission. We also observed very few *treatment complications* (on the order of 5 percent or less), and nearly all of them involved harmful effects of medications.

Figure 6

Percent of pediatric asthma hospitalizations involving adverse outcomes: Medicaid and privately insured, 1991



Source: 1991 medical records data, the Quality of Care: Medicaid and Other Populations Study, Contract number: HCFA 500-94-0017.

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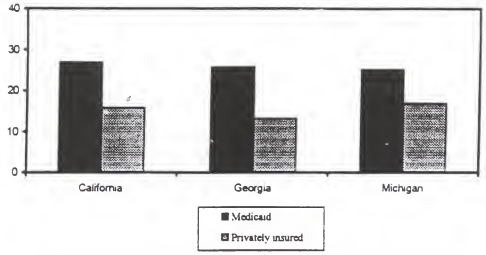
Although the data suggest fewer treatment complications among Medicaid patients in Georgia compared to privately insured patients (2.1% compared to 5.0%, $p<.05$), there were not enough complications to allow us statistically to control for other factors such as severity. One child died—a boy in the Michigan Medicaid population who entered the hospital in severe respiratory distress.

Hysterectomy: Four *deaths* occurred that were evenly distributed among the Medicaid and privately insured groups in Georgia and Michigan. Figure 7, however, shows the *rates of surgical complications* to be higher for Medicaid than privately insured cases in all three States ($p<.01$). From 25 to 27 percent of the Medicaid cases, compared to 13 to 17 percent of the privately insured cases, suffered complications—most commonly urinary tract infections, paralytic ileus or intestinal obstruction, and wound complications such as hematoma and infection

Figure 7

Percent of hysterectomies involving surgical complications: Medicaid and privately insured, 1991



Source: 1991 medical records data, the Quality of Care: Medicaid and Other Populations Study, Contract number: HCFA 500-94-0017.

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The odds of a complication were 69 percent higher for Medicaid women, even after controlling for other underlying differences. Across all three States, nonwhite patients had a substantially higher risk, and older women a modestly increased risk of surgical complications.

We studied a number of other outcomes of general interest. Statistically significant differences were found between Medicaid and privately insured patients for several of these outcomes. For example, Medicaid women in California and Michigan were less likely to have surgery for fibroid tumors of inconsequential size (19% compared to 29% in California, $p<.01$; 20% compared to 27% in Michigan, $p<.05$). In contrast, greater percentages of Medicaid hysterectomy patients in all three States were of young age (aged 30 or younger: 10.9% compared to 1.2% in California; 22% compared to 6% in Georgia; and 20% compared to 4% in Michigan; $p<.01$ in each case). Most of the young women receiving these surgeries in both payer groups had surgery for conditions in which hysterectomy is an elective procedure.

Complicated Delivery — Mothers: Figure 8 shows rates of labor and delivery complications. There are three specific outcomes of special interest for the Medicaid mothers:

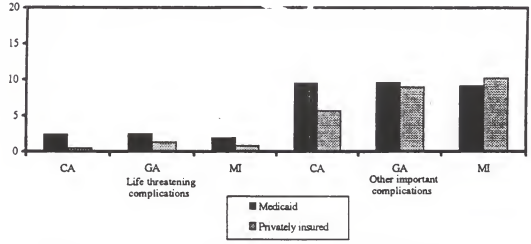
- Life-threatening complications—postpartum hemorrhage, blood-borne infection, pulmonary embolism—occurred in 0.5 to 2.5 percent of the cases. Although rates of these complications were generally similar in all three States (2.4% of Medicaid compared to 0.5% of private pay

in California; 2.5% and 1.3% in Georgia, and 1.9% and 0.8% of in Michigan), the differences were statistically higher for California Medicaid than the privately insured ($p<.05$).

- Rates of other important complications, such as accidental lacerations and infections, were similar in Georgia and Michigan, irrespective of payer (9.6%, Medicaid compared to 9.0%, private pay in Georgia, 9.2%, Medicaid compared to 10.2%, private pay in Michigan); rates were higher for California Medicaid than privately insured patients (9.5% compared to 5.7%, $p<.05$).
- No maternal deaths occurred in any of the groups studied.

Figure 8

Percent of deliveries involving complications of labor and delivery: Medicaid and privately insured mothers, 1991



Source: 1991 medical records data, the Quality of Care: Medicaid and Other Populations Study, Contract number: HCFA 500-94-0017.

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When adjusting for underlying differences between Medicaid and private pay patients, other findings emerged:

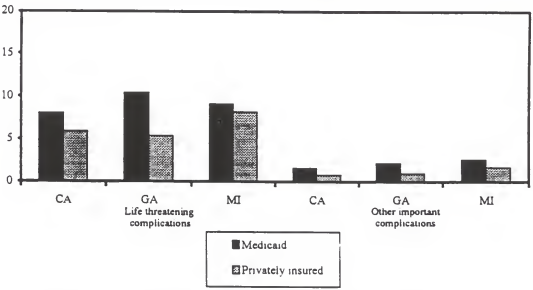
- In California, Medicaid patients that delivered vaginally had about the same risk of a life-threatening or other important complication as private pay patients, but for Medicaid women having c-section, the odds of a complication was 5.1 times higher.
- In Georgia, Medicaid patients that delivered vaginally had about half (42%) the risk of a complication compared to private pay patients — but those having c-section had 1.9 times higher risk.

Newborn Babies (Newborns): Three outcomes of special interest reflect the overall quality of care received by newborn babies during their hospital delivery stay: life-threatening complications such as asphyxia, fetal distress, convulsions, encephalopathy or serious infection; other important delivery complications such as lacerations and fractures; and death.

The results (Figure 9) show that rates of both *life-threatening complications* and *other important complications* were similar for Medicaid and private pay patients in every State. Rates of *life-threatening* complications were 8.0 percent for Medicaid and 5.9 percent for private pay patients in California, 10.4 percent and 5.4 percent in Georgia, and 9.1 percent and 8.2 percent in Michigan. Rates of other important complications were 1.6 percent and 0.3 percent in California, 2.2 percent and 1.0 percent in Georgia, and 2.6 percent and 1.7 percent in Michigan. The differences were statistically significant only in the case of *life-threatening* complications in Georgia ($p<.05$); this result was primarily based on higher rates of respiratory distress among the Medicaid newborns (8.9% vs. 4.9%, $p<.05$)

Figure 9

Percent of newborns experiencing complications of labor and delivery: Medicaid and privately insured, 1991



Source: 1991 medical records data, the Quality of Care: Medicaid and Other Populations Study, Contract number: HCFA 500-94-0017.

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Five newborn babies *died*: two in the Georgia Medicaid group, one in the Michigan privately insured group, and two in the Michigan Medicaid group. Of the five deaths, three were related to

prematurity and low birthweight, one to multiple congenital anomalies, and one to abnormal position of the infant. The medical literature suggests that few inhospital deaths of newborns are directly caused by labor and delivery management (Niswander et al., 1984); more frequent causes of these deaths are poor maternal health habits and complicating maternal and fetal conditions

—In terms of severity at admission?

We compared Medicaid patients with private pay patients in regard to the severity of their condition at time of admission to the hospital, not only because such differences may help explain differences in treatments and outcomes, but also because they may have resulted from differences in preventive and ambulatory care. We looked at the severity of the condition under treatment (e.g., asthma) as well as the presence of other diseases (e.g., diabetes) with possible bearing on a patient's hospital treatment.

Pediatric Asthma: We judged the severity of each pediatric asthma case admitted to the hospital as falling into one of four categories: 1) mild, 2) moderate, 3) severe, and 4) respiratory failure. Since very few cases of respiratory failure occurred, we combined the last two categories for purposes of comparing Medicaid and private pay patients.

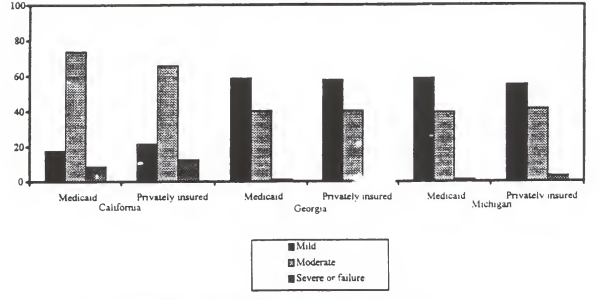
Figure 10 shows that asthma severity levels did not differ between Medicaid and private pay patients within each of the three study States. However, the percentage of *mild* cases was considerably lower in California for both Medicaid and private pay patients (about 20 percent) compared to Michigan and Georgia (about 58 percent). The precise reason for this disparity is unclear, although it suggests important practice differences between the States in deciding when to admit these patients.

In California, the severity level of conditions complicating the asthma episode was similar for Medicaid and private pay patients (28% of Medicaid and 27% of private pay patients had a complication). However, in Georgia and Michigan, the severity level of complicating conditions on a four-point scale from absent to life-threatening was lower for Medicaid patients. In Michigan, 25 percent of Medicaid patients had a complicating condition (such as bronchitis or pneumonia) compared to 36 percent of private pay patients. In Georgia, 34 percent of Medicaid and 41 percent of private pay patients had a complication.

The distribution of patients according to whether they had no, one, or two or more important coexisting conditions (e.g. diabetes) differed for Medicaid and private pay patients in California ($p<.01$) and in Michigan ($p<.05$). The percentage of children with one or more complications was higher for Medicaid than privately insured children in California (12% compared to 6%) and in Michigan (14% compared to 10%).

Figure 10

Percent of pediatric asthma cases by severity at admission: Medicaid and privately insured, 1991



Source: 1991 medical records data, the Quality of Care: Medicaid and Other Populations Study, Contract number: HCFA 500-94-0017

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Finally, patient histories indicated that Medicaid patients may have suffered a higher rate of *severe* asthma events in the past than private pay patients. The rate of previous hospitalizations in particular appeared to be about 50 percent higher for Medicaid children than for private pay children in California and Georgia, and about 30 percent higher in Michigan.

Hysterectomy: We studied four classes of severity for hysterectomy patients: the severity of the primary condition prompting surgery; the presence or absence of each of 17 clinical conditions associated with an increased risk of perioperative cardiac complications; the presence or absence of each of seven important coexisting conditions; and the total number of indications prompting hysterectomy for each patient.

There were few differences in the *severity of the conditions prompting hysterectomy* between Medicaid and private pay women. In Michigan, Medicaid patients had more severe leiomyomata (uterine fibroids) and chronic pelvic pain. In Georgia, Medicaid patients had more severe leiomyomata while privately insured patients had more severe vaginal prolapse. More Medicaid than private pay patients underwent hysterectomy for medical emergencies (range of 1.0% to 2.0% compared to 0.2% to 0.5%) and for uterine cancer (range of 2.1% to 3.7% compared to 0.5% to 1.2%).

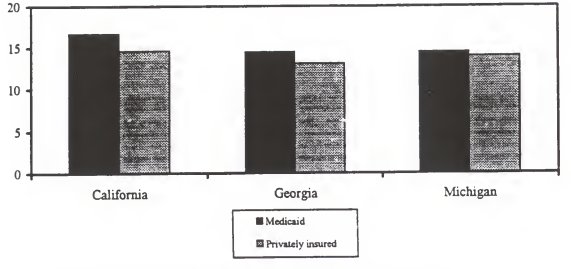
Overall, about 10 percent of all patients had at least one risk factor for *perioperative cardiac complications*. Though the percentages did not differ significantly between Medicaid and private pay patients in any of the three study States, the number of patients with at least one important coexisting condition was higher for Medicaid women than for private pay women in California (28% compared to 21%) and in Georgia (39% compared to 23%)

Finally, about one-third of all the patients studied had *multiple indications for hysterectomy* (two or more). Only in Georgia did we find a statistically significant difference between Medicaid and private pay women in the percentage with more than one indication for surgery: 36 percent of private pay compared to 23 percent of Medicaid patients had two or more such indications ($p < .1$).

Figure 11 uses a summary measurement combining all of the above aspects of severity to compare Medicaid and private pay hysterectomy patients. This summary severity index predicted the percentage risk of a hysterectomy complication based on several separate indicators of severity. The results show that the average severity level is slightly higher for Medicaid than private pay patients in all three States (16.7 compared to 14.7, California; 14.5 compared to 13.1, Georgia; 14.5 compared to 14.0, Michigan).

Figure 11

Average severity of hysterectomy patients: Medicaid and privately insured, 1991



Source: 1991 medical records data, the Quality of Care: Medicaid and Other Populations Study, Contract number: HCFA 500-94-0017.

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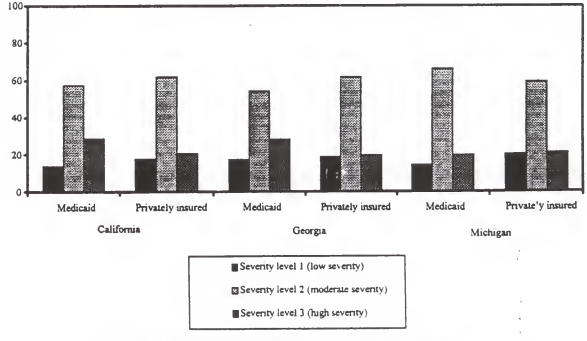
Complicated Delivery: We measured three aspects of patient severity for women with complicated deliveries: the severity of the presenting condition, the incidence of preventable prenatal complications such as high blood pressure and alcohol abuse, and the number of important coexisting conditions such as diabetes.

We compared the *severity of each presenting condition* for Medicaid and privately insured patients (Figure 12). Only two instances of statistically significant differences were found (from the total of 15 comparisons). Problems of dysfunctional labor were more severe for Medicaid patients than privately insured in both California and Georgia, with 71 percent of Medicaid patients in both States at the highest severity level (level 3) compared to 54 percent of California and 53 percent of Georgia private pay patients. About one-third of California's and 29 percent of Georgia's complicated deliveries presented with dysfunctional labor.

Figure 12

Percent of deliveries by severity at admission: Medicaid and privately insured, 1991



Source:1991 medical records data, the Quality of Care: Medicaid and Other Populations Contract number: HCFA 500-94-0017.

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Medicaid complicated delivery patients had a higher rate of certain *preventable prenatal conditions*—including anemia, drug and alcohol abuse, cigarette use, and gonorrhea or syphilis—than the nonMedicaid group. For example, 17 percent of Medicaid compared to 5 percent of

private pay patients in California were reported in the medical record to be active cigarette smokers; in Georgia, comparable percentages were 28 percent compared to 12 percent; and in Michigan, the percentages were 44 percent compared to 27 percent ($p < .01$ in each case). No statistically significant differences were seen in the percentages of patients presenting with elevated blood pressure or poorly controlled gestational diabetes. The two groups also differed little on the number of other important *coexisting conditions* they suffered such as kidney disease or heart problems.

Prenatal care records, particularly those for Medicaid patients, were frequently missing from the chart. This was the case for 7.2 percent of Medicaid and 0.5 percent of privately insured patients in California, 21.0 percent and 7.4 percent of Georgia patients, and 23.8 percent and 15.9 percent of Michigan patients. Even when prenatal records were present, they sometimes lacked complete information about when prenatal care was initiated or how many visits were made - in part related to the fact that a patient's provider sometimes changed upon becoming eligible for Medicaid. For example, information regarding trimester of first prenatal care was missing for 4.1% of Medicaid and 0.8% of privately insured patients in California, 9.4 percent and 7.4 percent in Georgia, and 17.9 percent and 7.9 percent in Michigan.

Where complete information was present, we observed differences in the adequacy of prenatal monitoring between Medicaid and privately insured patients that could influence a patient's condition at the time of delivery. Based on an index combining information regarding the gestational month in which care was initiated and the number of visits, 56 to 65 percent of Medicaid patients were judged to have had inadequate prenatal care, compared to 25 to 31 percent for private pay patients ($p < .05$ in each State).

—In terms of service intensity?

To compare the intensity of care (or concentration of health care services related to the patient's medical condition) given Medicaid and privately insured patients, we compiled lists of common treatments, evaluations, and services for each of the conditions studied, and measured them by such factors as average length of stay, percent of cases involving intensive care unit (ICU) admission, average length of stay in the intensive care unit, diagnostic intensity, and treatment intensity.

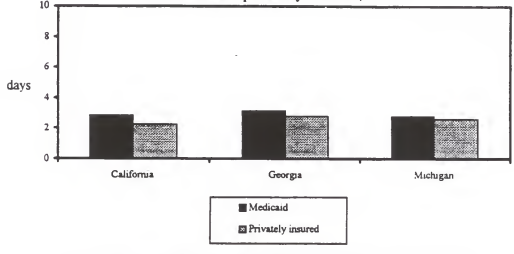
Pediatric Asthma: Pediatric asthma is one of the conditions for which treatment intensity can best be studied because recovery from an acute episode relates directly to the provision of appropriate and sufficient medications. The first line of therapy involves treatment with inhaled or injected medications called "bronchodilators." Patients with moderate to severe episodes may also need treatment with other classes of medications, may need to stay in the hospital longer, and in general, may require a greater quantity of care.

We looked for differences between Medicaid and privately insured cases in average length of stay, use of important medications, and use of diagnostic tests, and found:

- In California and Georgia, as shown in Figure 13, the *average length of stay* was longer for Medicaid children (2.9 days compared to 2.3 days in California, $p<0.1$, 3.1 days compared to 2.8 days in Georgia);
- *Adjusted length of stay* was 21 percent longer in the California Medicaid group and 9 percent longer in the Georgia Medicaid group, after controlling for important illness severity and sociodemographic differences;
- Analyses that adjusted for illness severity and sociodemographic differences showed Michigan Medicaid patients to have hospital stays that were 12 percent longer than comparable stays for private pay patients.

Figure 13

Average length of stay, pediatric asthma: Medicaid and privately insured, 1991



Source: 1991 medical records data, the Quality of Care: Medicaid and Other Populations Study, Contract number: HCFA 500-94-0017.

Prepared by: Research and Policy Division, The MEDSTAT Group

No important differences in ICU admission and length of stay were observed between Medicaid and privately insured patients in any of the States.

The findings for *use of medications* also showed important differences in the average number of bronchodilator treatments, with Medicaid patients in all three States receiving fewer doses per hospital day (2.2 compared to 2.8 in California, 1.4 compared to 1.9 in Georgia; and 1.9 compared to 2.2 in Michigan; $p<.01$ in each case). The average number of classes of medications

given children were comparable (2.7 compared to 2.8 in both California and Georgia, and 2.7 for both groups in Michigan).

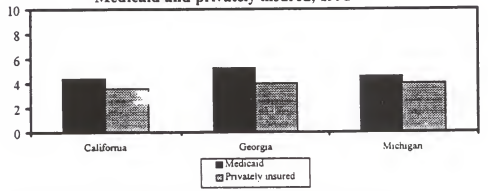
Although the findings for *intensity of monitoring and diagnostic testing* show no consistent trends, they do reveal statistically significant differences between the two payer groups:

- In Michigan, more diagnostic tests were performed on Medicaid than privately insured children in the first 24 hours of their hospital stay, on average (3.1 vs. 2.8, $p<.01$);
- On the other hand, the rates of pulmonary function testing for monitoring of asthma in both Georgia and Michigan were slightly higher for private pay than Medicaid children (2.0 vs. 1.8, Georgia, $p<.01$; 1.8 vs. 1.5, Michigan, $p<.01$).

Hysterectomy: As shown in Figure 14, the *average length of stay* for Medicaid women undergoing hysterectomy was longer in all three States than that for private pay women (4.4 and 3.6 days in California; 5.3 and 4.0 days in Georgia; 4.6 and 4.0 days in Michigan, $p<.01$ in each case). The fact that Medicaid patients as a group tended to be more severely ill does not explain this longer length of stay, since length of stay still remained longer for Medicaid patients even when adjusting for severity and other underlying differences. Adjusting for these factors, lengths of stay were estimated to be 12 percent longer for Medicaid patients in California, 19 percent in Georgia, and 11 percent in Michigan.

Figure 14

Average length of stay, hysterectomy: Medicaid and privately insured, 1991



Source: 1991 medical records data, the Quality of Care: Medicaid and Other Populations Study. Contract number: HCFA 500-94-0017.

Prepared by: Research and Policy Division, The MEDSTAT Group

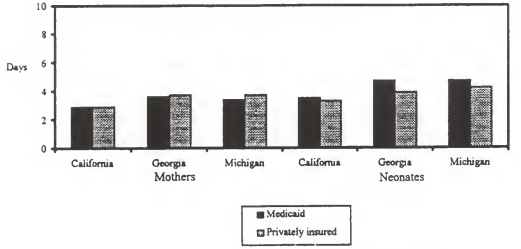
In addition, more Medicaid than privately insured patients in all three States were *admitted to the ICU* (range of 2.0% to 3.8% for Medicaid patients compared to 0.7% to 1.5% for the privately insured, $p<.05$). The meaningfulness of these differences is questionable given their small size.

Complicated Delivery: Figure 15 shows no significant *length of stay* differences between Medicaid and privately insured mothers with complicated deliveries in any of the three States. The average length of stay for Medicaid mothers with complicated deliveries was 2.9, 3.6 and 3.4 days, compared to 2.9, 3.7 and 3.7 days for the privately insured in California, Georgia and Michigan respectively.

On the other hand, there were *length of stay* differences between Medicaid and privately insured newborns (from complicated deliveries) in Georgia (Figure 15). Specifically, the average length of stay for Georgia Medicaid newborns (from complicated deliveries) was longer (4.7 days) than for privately insured newborns (3.9 days, $p<.05$).

Figure 15

Average length of stay, complicated delivery: Medicaid and privately insured, 1991



Source: 1991 medical records data, the Quality of Care: Medicaid and Other Populations Study, Contract number: HCFA 500-91-0017.

Prepared by: Research and Policy Division, The MEDSTAT Group

3. What factors account for differences in outcomes between Medicaid and privately insured patients? To what extent are underlying differences in severity of illness responsible for these differences? To what extent do differences in treatment approaches and the amount of care given account for these differences?

Outcomes were generally similar for Medicaid and privately insured patients. However, in several cases, Medicaid patients suffered more treatment complications than privately insured patients. This was true for women in all three States undergoing hysterectomy; women in California and Georgia with complicated delivery; and newborns in Georgia. We also found the opposite:

Georgia Medicaid children with asthma had fewer treatment complications than privately insured children.

To understand the reasons underlying these differences, we grouped the three types of possible explanations as follows

- *Population differences*: If higher rates of complications are due to explainable differences between the two payer groups such as age or unrelated illnesses, then the higher complication rates are unlikely to represent true quality of care problems.

- *Differences caused by problems in accessing and/or seeking health care*: If the findings are due to the fact that Medicaid patients tend to be sicker when they present for care, then this may suggest problems of access to care, failure to seek care, or problems in making lifestyle changes that could improve outcomes.

- *Differences in the quality of the care provided*: Poorer outcomes that occur because less intensive or lower quality care is provided once the patient accesses the health care system suggest more fundamental quality of care problems.

Pediatric Asthma: In general, we found very few differences between Medicaid and privately insured children for any of the four outcomes of special interest that were studied. Statistically significant differences were found in only one case: Georgia Medicaid children experienced less treatment complications than privately insured children (2.1% compared to 5.0%, $p<0.5$). In this instance, there were not enough complicated cases to allow us statistically to control for other factors such as severity of illness.

Hysterectomy: Our analysis suggests that the higher treatment complication rates for Medicaid patients are related to all three of the above explanations. In each of the study States, simple *age differences* contributed to the findings, with older age associated with higher complication rates. *Racial differences* between Medicaid and privately insured patients also explained some of the differences. Since race, unlike age, is not known clinically to affect surgical outcomes, the significance of this finding is harder to interpret.

Higher percentages of Medicaid patients undergoing emergency hysterectomy in all three study States contributed to the differences in outcomes for Medicaid patients. These higher percentages suggest problems of *accessing and/or seeking health care;* however, the data do not reflect actual rates of emergent procedures and should be interpreted with caution. In addition, this study focused on care documented in the hospital record, and thus, we lack complete sufficient information to fully explain the factors that contributed to these emergent procedures.

Differences in *intensity of treatment* did not explain the differences in outcomes. This was not unexpected, since there were no apparent measures of hysterectomy treatment intensity that

clearly had a major impact on outcomes and could be studied from medical records. Nor did *process of* care explain the differences; in fact, we found better conformance to process of care criteria with an uncertain likelihood of harm for Medicaid patients in all three States.

Complicated Delivery Rates of complications were generally similar for women with complicated deliveries in all three States. Differences were found in only a few instances. In California, Medicaid women with c-section deliveries had a higher rate of complications than privately insured patients. In Georgia, the results for Medicaid and privately insured patients were mixed. In Georgia, Medicaid patients that delivered vaginally had a lower risk of complications compared to privately insured patients, whereas the opposite was true for women having c-section.

Like hysterectomy, the findings appear to reflect factors such as *population differences.* For example, there were greater percentages of teenage mothers in the Medicaid groups who, in turn, were found to have a greater clinical risk of complications. Although the impact of this and other factors was taken into account by statistical analysis, we still found that California and Georgia Medicaid patients delivered by c-section had a higher risk of complications — as did Georgia privately insured women delivered vaginally. These findings suggest that *differences in the quality of care once care was accessed* contributed to some extent. Interestingly, other study results did not show differences between California Medicaid and private pay patients for other quality indicators such as process of care or appropriateness, suggesting these were not key factors in explaining the observed differences.

Treatment outcomes showed little important variation between Medicaid and privately insured newborns in the three study States. Across the three treatment outcomes that were studied, statistically significant differences were found in just one instance. Medicaid neonates in Georgia experienced more serious complications (this category included conditions such as fetal distress, convulsions, and asphyxia) than privately insured neonates. Much of the difference in the complication rates was attributable to the somewhat *lower average birth weight* and *gestational age* of these infants. However, some difference remained unexplained even when controlling for newborn gestational age and birth weight. This difference was not due to differences in the intensity of care given to newborns in the two groups.

4. Do hospitals treat Medicaid patients differently than privately insured patients?

When Medicaid quality differs from private pay quality, is it because Medicaid patients tend to receive their treatments at different types of hospitals or is it because Medicaid patients tend to receive different treatment than private pay patients regardless of the hospital treating them? While this issue is important because different policies may be required to correct disparities within hospitals than to correct disparities between hospitals, it applies only to the small subset of outcomes that were found to be poorer for Medicaid compared to private pay patients.

In our analyses of between- and within-hospital components of variation, we found that between-hospital variation explained very little (only 5 to 10 percent) of the variability in total length of stay after accounting for other risk factors. Moreover, the effect of payer did not vary significantly across hospitals. This implies that differences in length of stay are better explained by factors that vary within hospitals, including payer, than by the characteristics of hospitals themselves. The results were similar for other indicators, like appropriateness, process of care and complications of care. We found that hospital characteristics diminished the effect of payer status in only one instance: a significant difference in the rate of process of care noncompliances between Medicaid and private pay pediatric asthma patients in Michigan became insignificant after adjusting for hospital characteristics. These analyses indicate that when a difference in outcomes exists between Medicaid and private pay patients, it is most likely not due to the choice of hospitals for Medicaid patients.

5. How do differences in Medicaid program policies found in the three study States influence the quality of care provided to Medicaid patients?

Although it is difficult to establish cause and effect, it seems fair to assume that differences between Medicaid program characteristics in the three States may explain some of the findings of this report. In particular, we found somewhat more differences between Medicaid recipients and privately insured individuals in Georgia and California than in Michigan.

One factor possibly contributing to the findings in Georgia is that the Medicaid program has stricter income limitations, resulting in Medicaid recipients with lower average incomes than recipients in California and Michigan. Since poorer health status is associated with poverty, the outcomes reported may reflect the more severe economic need of the population receiving Medicaid services in Georgia. What's more, this State offered fewer optional benefits and covered fewer optional eligibility categories.

Conversely, California offered more services and covered more optional eligibility categories but was more aggressive in implementing cost-containment efforts and utilization review than the other two study States. California's policy of contracting only with selected hospitals for Medicaid care exemplifies how this State has created a competitive environment encouraging cost-containment. It appears also that California's stricter utilization review program had a beneficial effect, contributing to its smaller percentages of inappropriate hysterectomies found for Medicaid patients. On the other hand, cost-containment policies may have resulted in underuse of the procedure not measured in this study.

The results on adequacy of prenatal care for Medicaid patients suggest delays in initiating care persist in all three States despite concerted efforts to facilitate early program enrollment. Adequate prenatal care is believed to lessen the likelihood of low birthweight and newborn complications.

PART III. DISCUSSION

Our findings suggest that, overall, the Medicaid programs in the early 1990s succeeded in providing care that was about the same quality as that received by private pay patients. In the case of children with asthma, for example, Medicaid and privately insured children received similar care, particularly with respect to appropriateness and outcomes. In all three States, only four cases were judged to be inappropriate admissions, and three of those were privately insured. Medicaid and privately insured cases showed similar adherence to process of care criteria with high likelihood of harm. Few cases involved adverse treatment outcomes, regardless of the plan or the State.

The only significant difference in the treatment of pediatric asthma was found in the adherence to care criteria with uncertain likelihood of harm. More Medicaid cases did not adhere to one or more criteria than did privately insured cases (58% and 49% in California, 72% and 54% in Georgia; and 62% and 56% in Michigan).

For hysterectomy cases, results varied by quality indicator. All three States showed a similar pattern of variation in quality of care for two of the indicators:

- Medicaid patients in all three States better adhered to criteria with uncertain likelihood of harm than privately insured patients (74% criteria failure rate for Medicaid patients and 86% for privately insured in California, 66% vs. 79% in Georgia, 79% vs. 87% in Michigan)

- Medicaid patients in all three States had more surgical complications such as wound infections and hematoma than privately insured patients (27% and 16% in California; 26% and 13% in Georgia; and 25% and 17% in Michigan).

- California Medicaid patients had many fewer inappropriate hysterectomies, with adjusted odds that were 46 percent lower than for the privately insured.

For complicated delivery, the findings for certain quality indicators showed strong variation by State.

- Although the overall rate of inappropriate decision-making (that is, in the choice of vaginal delivery or c-section) was modest for all groups (from 3.6% to 7.9%), Michigan Medicaid patients had about 45 percent lower odds of an inappropriate delivery type.

- California Medicaid patients having c-section had 5.1 times the risk of complications that privately insured patients had.

- Georgia Medicaid patients that delivered vaginally had nearly half (42%) the risk of complications than privately insured patients. Those having c-section, however, had 1.9 times the risk.

It should be noted here that our study focused on quality of hospital care. In most cases, we have studied prehospital quality of care as it influenced inpatient quality of care, not as a quality of care indicator in and of itself; this is because to study prehospital care in detail would have required other data and study approaches. Thus, we cannot make inferences about whether any differences in quality of care are attributable to problems of access or to patient factors such as education, race/ethnicity, sex, age, and other social factors. Studies that have addressed that topic have found that factors such as lower education often explain a considerable portion of observed gaps in preventive services among patients from different socioeconomic levels (e.g., Short and Lefkowitz, 1992). What our study has demonstrated, however, is that Medicaid programs in the three States of the study provide approximately the same quality of care that privately insured patients receive.

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Nancy Merrick, MD, Principal Investigator, and Robert Houchens, Ph.D., Statistician and Chief Analyst, were responsible for the overall design and technical oversight of the individual analyses. Other contributors included Allison Mayer-Oakes, MD, Co-Principal Investigator, Jon Conklin, current project director, Mark Miebach and Jeffrey Wasserman, Ph.D. former project directors. Christy Moynihan, Ph.D, was original Principal Investigator, responsible for study design and methods and standards development. Analysis and programming support were provided by Deo Bencio, Julie Kusick, Laurie Meneades, Jelena Pavlov, Kate Sredl, Luella Englehart, Sue Dodds and Mei-Ling Mason.

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Members of the Medicaid Quality of Care Study Technical Advisory Panel included: Gary Clark, JD, MA, Elliott Fisher, MD, MPH, Gretchen Fleming, Ph.D., Barbara McNeil, MD, Susan Meister, Ph.D., MSN, Edward Neuschler, Sara Rosenbaum, JD, Stephen E. Saunders, M.D., MPH, and Barbara Starfield, MD.

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This report was written by Nancy Merrick, MD, Bob Houchens, Ph.D., Jon Conklin, and Allison Mayer-Oakes, MD. Several individuals provided review and comments including M. Beth Benedict, Dr.PH, Marian Gornick, Rosemarie Hakim, Ph.D, and Penelope Pine.

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The Honorable Newt Gingrich
Speaker of the House of Representatives
Washington, D C 20515

Dear Mr Speaker

I am respectfully submitting our report to Congress, entitled "The Medicaid Quality of Care Medical Records Study."

BACKGROUND

This is the second and final report submitted to Congress in response to the Omnibus Budget Reconciliation Act of 1986 (Public Law 99-509) which amended the Social Security Act by adding Section 9432, "State Utilization Review System." (The first report was submitted on June 2, 1992.) The major intent of this legislation was to evaluate quality of care for Medicaid and other populations.

Sections 9432(c)(1) and 9432(c)(3)(A) and (B) requires the Secretary of the Department of Health and Human Services to conduct a study of the utilization of selected medical treatment and surgical procedures by Medicaid beneficiaries to assess the appropriateness, necessity, and effectiveness of such treatments and procedures.

In 1986, Congress mandated a study to evaluate the quality of health care provided to Medicaid recipients and other populations. We fulfilled part of this mandate in a report entitled, "Interim Report to Congress, Patterns of Health Care Utilization in the Nonelderly Medicaid Population of Selected States," submitted to Congress on June 1, 1992. In further and final response to this mandate, HCFA awarded a contract to the MEDSTAT Group, Inc., to conduct an evaluation of the appropriateness (medical necessity), process of care, and effectiveness (outcomes) of selected medical and surgical treatments and procedures using data abstracted from inpatient medical records. This report presents the findings of the Medicaid Quality of Care Medical Records Study, which compared the quality of hospital care provided to Medicaid women and children with that provided to privately-insured women and children.

HIGHLIGHTS

The study examined the care of patients with three conditions: pediatric asthma, hysterectomy, and complicated labor and delivery. Five indicators were developed to assess the level of the quality of care given during hospitalization for these conditions: appropriateness to hospitalize or perform a procedure; process of care during the hospitalization; outcomes of treatments and procedures; severity at time of admission; and intensity of care. Independent criteria for judging the quality of medical care for each indicator were developed by national panels of medical experts for each clinical condition.

One hundred eighteen hospitals were selected to represent all hospitals in California, Georgia, and Michigan that provide services for children and women and their newborns. Approximately 400 medical records were randomly selected for each condition, payor group, and State during the year 1991. The sample for this study consisted of 2,391 children hospitalized for asthma, 2471 women who underwent hysterectomies and 2,378 women with a complicated labor and delivery, totaling 7,240 Medicaid- and privately-insured women and children. Data for the complicated labor and delivery sample included data from both maternal and neonatal records.

FINDINGS

An analysis of patient and hospital characteristics revealed that Medicaid-covered children in two States and the women in all three States were younger and represented more minority groups than their privately-insured counterparts. In general, Medicaid women and children were treated in public hospitals, teaching hospitals, and hospitals with large bed capacities.

The appropriateness of medical decisions to hospitalize a child with asthma, perform a hysterectomy, and do a cesarean section on a woman with labor and delivery complications was comparable between Medicaid- and privately-insured children and women. The study also revealed that once hospitalized, Medicaid-covered children with pediatric asthma, women undergoing hysterectomy, and women with labor and delivery complications received a level of care that was similar to that experienced by privately-insured children and women. Most importantly, outcomes of care were essentially similar between the two payor groups, in each condition, and across the three States.

At baseline, the Medicaid patients were more severely ill. At the time of admission, Medicaid-covered children with asthma had already had more hospital admissions than their privately-insured counterparts. Women on Medicaid undergoing hysterectomies with nonmalignant conditions were admitted more acutely ill. Similarly, Medicaid-covered women with complicated labor and delivery had more emergent complications and more preventable risk factors than the privately-insured. This higher level of severity at admission suggests that the Medicaid-covered women and children in this sample were not accessing care in as timely and appropriate manner as their privately-insured counterparts.

As a result, there were differences in outcomes that were not related to the inpatient quality of care provided to Medicaid-covered patients. For example, Medicaid-covered women undergoing hysterectomy suffered more complications than privately-insured women. However, this finding was related directly to both the severity of the underlying condition at the time of admission and sociodemographic factors such as race and age. As a result, the Medicaid patients with hysterectomies had longer hospital stays and slightly more admissions to intensive care units. There also were more premature births among Medicaid-covered women admitted with labor and delivery complications than among privately-insured women. Despite this, there were no substantial differences between outcomes for the infants of Medicaid-covered and those of privately-insured women.

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The results of this study indicate that Medicaid-covered women undergoing the common procedure of hysterectomy or with conditions that complicate labor and delivery, and children hospitalized with asthma receive inpatient care that is adequate and compares favorably with care received by privately-insured patients. Differences in severity of the condition at the time of admission, and use of hospital resources, and complications among the Medicaid patients may be directly attributable to the greater burden of disease among these vulnerable populations.

I am also sending a copy of this report to the President of the Senate.

Sincerely,

Donna E. Shalala

Enclosure

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